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ORIGINAL ARTICLES.

DISTURBANCES OF DIGESTION IN INFANTS RESULTING FROM THE USE OF TOO HIGH FAT PERCENTAGES.

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THAT serious disturbances of digestion in infants may be due to an excess of any of the milk constituents in the food employed, is a trite remark, and is the daily experience of all who see much of the results of infant feeding. The practitioners and the skilled nurses who direct the feeding of infants have come pretty generally to appreciate the symptoms which usually follow too high proteids, to understand what percentages of proteids an average infant may be expected to digest under given conditions, and how these percentages may be secured in the various milk formulas used. With the methods of home modifications of milk now in vogue, it is probably true that the proteid percentages of our formulas have been rather lower than higher than we have calculated, but often to the decided advantage of the patient.

But how is it with the fat? Personally I have reached the conclusion that disturbances of digestion resulting from an excess of fat are quite as serious, if no quite so obvious, as those which follow the use of too high proteids, and that they need to be studied just as carefully. Even those who give special attention to infant feeding have been slow to learn the infant's capacity with respect to the digestion of fat, both in health and in the ever varying conditions of disease. Others who have given the question less attention have fallen into error in one of two ways: In following the formulas of the books, instead of using an ordinary milk, with a fat content of 4 per cent., they have substituted a rich Jersey milk containing from 5 to 5.5 per cent. fat. Thus unwittingly they have given from 5 to 7 per cent. fat when they have supposed they were giving a food containing 3.5 or 4 per cent. Or, they have made another mistake of intentionally increasing the fat, almost without limit, for the purpose of overcoming that most troublesome symptom in artificial feeding—chronic constipation.

Errors like these are exceedingly common and their consequences may be very serious. It is the purpose of the present paper to record some of the results seen with such feeding, all of the cases cited having come under observation in private practice in the course of a few months.

Case I.—Overfeeding with high fats, rapid increase in weight and progress in development till eight months; then general convulsions followed later by tetany, laryngismus stridulus, fatty liver (?). Recovery after three months illness.—In February, 1904, I was asked by a physician to see a baby of a medical friend whose feeding he had directed. The child had been considered a magnificent specimen of physical development, and a great triumph of the feeding art, until one week before my visit, at which time his weight, at eight months old, was twenty-one pounds. In the previous 3½ months he had gained ten pounds. The child had bright rosy cheeks; was strong in his muscles, already pulling himself up by the side of his crib and bearing his weight on his feet; and was, for his age, well advanced mentally. He seldom vomited; had a good appetite, and was taking until a few weeks before I saw him, seven feedings of six ounces each, but lately only six feedings, of a mixture made up as follows:

The upper sixteen ounces were taken from each of two quarts of a rich Jersey milk (Briarcliff Dairy): twenty-four ounces of this top milk were used in a forty-ounce mixture. Examination of the top milk used showed it to contain 10 per cent. fat; so that the baby was receiving in his food not less than 6 per cent. fat. With this food the bowels usually moved twice a day, the passages being smooth, large and yellow. An occasional restless night and some transient urticaria were the only clouds in the otherwise clear sky until February 16, when a stool not well digested was reported, with loss of appetite. These were not enough to make necessary any change in food.

The following morning, one hour after feeding, the child had a severe general convulsion which lasted from six to eight minutes, followed by a second one three hours later. The stomach was promptly washed out and all food stopped; calomel given and later castor oil, then bromide of soda. Five loose stools following this treatment, none of them especially foul. There was no rise of temperature and no signs of serious illness. The following day, as no unfavorable symptoms had occurred, the previous food was begun, but much diluted, the proportions being one part of the food to five parts of water. The strength of the food was gradually increased, so that at the end of four days the baby was taking five ounces of his original food diluted with only one ounce of water. During the next night some severe pain occurred, ascribed to colic; the next morning the temperature was 104.5° F. I saw him first early in the afternoon. He was, as he had been described, a splendid-looking child. The fat lay in great folds over his body and extremities. Fontanel large, but no other evi-

dences of rickets; no teeth. Liver much enlarged, the lower border being nearly two inches below the costal margin. Hands and feet in typical position of tetany, considerable muscular rigidity, movements painful, temperature 103.5° F.

A second clearing out of the intestinal tract was advised, and the first stool passed was examined chemically and found to consist of almost pure fat. All food was omitted for one day, all milk for a week, and then very low fat percentages given. The tetany gradually passed away, but was followed three weeks later by laryngismus stridulus which continued for nearly three weeks. There was much trouble with the digestion for the next two months and the child lost five pounds in weight. When last seen, 3½ months after his severe attacks, he was digesting well and thriving, but his weight was only nineteen pounds.

Several points of interest in this case deserve attention: (1) the long period during which the child bore the high percentage of fat without any apparent disturbance; (2) the severity of the nervous symptoms, the suddenness with which they came on and their long duration; (3) the prolonged disturbance of the digestion and general nutrition; (4) the large liver (*paté de foie gras!*) and stools consisting of almost pure fat.

Case II.—Prolonged feeding with high fat, notwithstanding which constipation and the development of moderate rickets, followed by acute disturbances of digestion with repeated convulsions.

This patient was also seen in consultation within a few days of Case I, and the symptoms presented many points of similarity. The milk used was from the same dairy; it was prepared after almost the same formula, except that the percentage of fat in the food as given was only 5 per cent. The patient was the first child of healthy parents, nursed for three months, had suffered somewhat from facial eczema at six months, after which barley water had been substituted for plain water as a diluent. For the past month the child had been taking the following formula:

℞ Top milk	.....	19 oz.
Barley water	.....	21
Sugar of milk	.....	4 even tablespoonfuls
Milk of magnesia	.....	1 teaspoonful

The top milk was the upper sixteen ounces from one quart of rich Jersey milk and had been estimated by the physician to contain 7 per cent. fat. The child was taking six ounces every three hours. With the addition of the magnesia the bowels moved regularly but the stools were pale yellow. The formula begun after weaning had been a similar one with a little lower proportion of milk. The baby was gaining from six to eight ounces a week and his weight at the time of my visit, when he was eight month old, was 18¾ pounds. There had been no vomiting, the child had a good appetite, slept well, and was considered to be in the best of health.

One week before my examination, without any change in the food or other assignable cause, the child had a slight convulsion in the evening. The following morning a second and more severe one. The temperature was elevated up to 103° F., and the child gave the appearance of being seriously ill. Food was stopped, the bowels cleared with calomel followed by magnesia, and the temperature quickly fell to normal. The child improved rapidly, and he was put back on his previous food, at first diluted, but strengthened daily until at the end of three or four days it was two-thirds the original strength. One week after the first convulsions, he had a third, and later in the day two more. I saw him in the evening. He presented all the appearance of a splendid, healthy, well-developed child with bright red cheeks, plenty of fat and muscles well developed. The head was well-shaped but craniotabes was present; no teeth. Physical examination otherwise negative. All food was stopped for twenty-four hours and a second clearing with calomel ordered. All milk was stopped for a week and then a mixture containing a low fat substituted. Three months later I saw the child again. He had one convulsion six weeks after the first group, apparently from a slight attack of indigestion. At the last visit he was in excellent condition, still no teeth at eleven months, with moderate head sweats, but general condition otherwise excellent. The craniotabes had disappeared.

It was interesting to note the development of rickets and the presence of constipation, in spite of the excessive amount of fat which his food had contained ever since he had been weaned at three months.

Case III.—Overfeeding with high fat—Convulsions.—This was an office patient, six months old, the second child of healthy parents, whose weight at birth was reported as 8¾ pounds. The mother had nursed for a few weeks then discontinued on account of illness. The child had been fed upon a milk modified at home, the proportions of which were stated to be as follows:

Milk	.....	12 ounces
Cream	.....	4½ ounces
Lime water	.....	1½ ounces
Water	.....	14 ounces

The child was given 5½ ounces every three hours. The cream used was examined and found to contain 35 per cent. fat. The proportion of fat in the food was thus about 6.75 per cent. Upon this mixture the child had gained very rapidly in weight, had had from three to four yellowish stools daily, occasionally containing masses called curds, and its progress had been considered most satisfactory until the age of four months. There had been some vomiting, but this had never been very troublesome. At four months old a severe general convulsion oc-

curred lasting twenty minutes; a second convulsion, two hours later. The food was reduced to a mixture of equal parts of milk and water, which was continued for a few days; but as the child did not gain as rapidly as before the mother, on her own responsibility, had returned to the original formula. The father, a dentist, being convinced that the convulsions were from dentition, ascribed great benefit to gum-lancing which was practised. After the first convulsion the general condition was not so good, slight symptoms of indigestion were present—regurgitation of food many times a day, much flatulence and stools usually yellow but occasionally green. Examination showed a moderately fat infant, pale, flabby without signs of rickets.

The cream was omitted from the formula and milk substituted, reducing the proportion of fat to about 2 per cent. The child made satisfactory progress from this time, had no further convulsions and its symptoms of indigestion rapidly disappeared.

Case IV.—Habitual vomiting aggravated by high fat; serious gastric catarrh produced; finally cured by stomach washing.—This was an infant, ten months old, also seen in consultation. The chief symptoms in this case were continued wasting with persistent vomiting. The vomiting had begun almost from birth and had been a most troublesome symptom up to the time of my visit. A great variety of infant foods and milk formulas had been employed, none with any very great success. Up to the eighth month the food had been, for the greater part of the time, barley water and condensed milk. For the past two months the child had been in the care of a physician who is enthusiastic in the feeding of high fats. The formula used had been:

Top milk	17 ounces
Water	13 ounces
Lime water	2 ounces

The child was given four feedings, seven ounces each; the interval between feedings, four hours. Occasionally an extra feeding was given during the night. The top milk was the upper seventeen ounces from one quart of the Briarcliff milk. According to two analyses of similar samples, the food contained as given about 5.30 per cent. fat. During the two months that the child had been on this diet, his weight had fallen from 9 pounds 8 ounces, to 8 pounds 4 ounces. His vomiting had not improved, in fact had grown steadily worse. Now not only was food rejected, but frequently mucus in large amounts at some time almost every day. The child had never had any acute disturbance of digestion; the bowels were constipated.

Examination showed a typical marasmus child. Head 16 inches, chest 14¼ inches, length 23½, and weight 8 pounds 4 ounces; at ten months his weight being only 2¾ pounds more than at birth. After one or two minor changes the child was put upon the following:

Plain milk	18 ounces
Water	7 ounces
Lime water	5 ounces

This was peptonized. He was given 5 ounces every four hours; five feedings daily. Stomach washing was begun, at first daily and then every other day. Large amounts of mucus, often as much as two ounces at a time were removed. With the stomach washing the mucus rapidly disappeared and the quantity and strength of the food were increased. The stomach washing was continued at longer intervals for a period of nearly two months during which time the weight steadily increased. At the end of four months he had gained 6¼ pounds. The progress from this time was rapid and uneventful and one year afterward the child was reported by the attending physician to be in robust health.

The condition had been in this case persistent gastric indigestion with excessive fermentation continuing until a gastric catarrh of serious proportion had developed. The high fat mixture which had been ordered had greatly aggravated this condition, and the state of the child at my first visit was really an alarming one.

Case V.—Feeding with high fat; eczema, habitual constipation, and finally habitual vomiting.—This case is an illustration of a very rapid gain in weight and subsequent development of serious digestive disturbance from very high fat. The child at birth was very large and robust, his weight being 11½ pounds. He had increased rapidly and at eight weeks old his weight was 15 pounds, at three months it was 17 pounds 10 ounces. The weekly gain during the greater part of the time was from 12 to 15 ounces. The formula used had been:

Top milk	24 ounces
Lime water	2 ounces
Water	22 ounces
Mellin's food	3 tablespoonfuls

The Mellin's food had been added to overcome the chronic constipation. The top milk consisted of 12 ounces removed from each of two quarts of the Briarcliff milk, the same dairy as that which supplied the milk in three of the preceding cases. The proportion of fat in the food given was approximately 7 per cent. The mother reported that the child had always been constipated, and that he had had no natural movement for three weeks, enemas or glycerin suppositories being usually required to induce one. The stools passed were large, dry, and a light yellow color. There had been a good deal of straining and finally a rectal prolapse had developed. The vomiting at first had been slight but recently had greatly increased until it had become very troublesome and was repeated several times each day. He had an excellent appetite and seemed never quite satisfied with the food given. A troublesome eczema of the face had appeared about the third month.

It was interesting in this case to see that the

constipation greatly improved when the fat in the food was reduced to 4 per cent.; but it was not entirely overcome until the fat was reduced to 3 per cent. The symptoms of indigestion and eczema continued to be troublesome for the next two to three months but no serious symptoms occurred, and the progress on the whole was satisfactory.

It would be easy from my records of private patients to multiply almost indefinitely examples of acute and chronic disturbances of digestion in infants from the use of too high fat. Those cited, however, illustrate the most frequent and the most serious types. Often the very rapid and unusual gain in weight goes on steadily until the acute upset comes. In other cases the results of such feeding are shown in a gradual loss of appetite, sometimes so complete that for weeks a child will hardly take one-third of his former food. The increase in weight now ceases and there may even be a steady but a slow loss. In such cases the infant seems to take into his own hands the matter of cutting down his food and thus prevents serious acute disturbances of digestion.

That gastric disturbances—habitual vomiting or regurgitation of food, continued fermentation and finally the production of a gastric catarrh—may follow the use of very high fat has often been emphasized; but it is not so generally appreciated that disturbances of intestinal digestion may also occur, and that even chronic constipation may be greatly aggravated by such feeding. The hard, dry, gray stools passed under these conditions frequently consist almost entirely of undigested fat. Steadily raising the proportion of fat because of the constipation is the plan often followed, and this makes matters worse.

Severe nervous symptoms such as occurred in several of the cases have not in my experience been very frequently seen from this cause, and I do not feel convinced that the form of auto-intoxication present was entirely due to the fats, although this is possible. The symptoms were not very different from those which accompany other forms of acute digestive disturbance.

There are some practical conclusions to be drawn from these cases. It is evident that the errors into which both physicians and patients have usually fallen have resulted from their fondness for rich Jersey milk and cream. Although there is pretty general agreement among those who have given special study to the question of infant feeding that milk from other herds, containing from 4 to 4¼ per cent. fat, is better, still a great majority of the profession and the public will turn from such milk as being thin and blue to the rich yellow product of the Jersey or Alderney herd. I believe that one of the chief causes of failure in feeding from the milk laboratory has been the use of too high fat, it being so easy for a physician under these circumstances to increase the fat percentage, particularly if his mind has been filled with the idea that thereby chronic constipation is likely to be overcome.

Mistakes like those above described may be avoided if the physician knows approximately the fat content of the milk, cream or top milk which he is using. Too often he falls into error by disregarding this entirely and treating all specimens of milk and cream alike, using them in the formulas which he may have obtained from some book. More definite results may be obtained in several ways. In the first place, the physician may obtain from the milk laboratory a cream or milk of a definite fat percentage and thus be able to calculate closely the amount of fat which his patient is taking in the formula given. Or he may himself examine the milk, top milk or cream which his patients are using. His advice is generally asked in the choice of the milk supply and if he habitually uses milk from the same dairy he can be fairly certain of his results. Such examinations with the Babcock tester or some of its modifications can be made in a few minutes, or a specimen may be sent to a laboratory and the fat determination had for one dollar.

In order to interpret correctly the result of these milk examinations he must learn to think in percentages. In no other way can one form any idea of how much fat he is giving. Although a little difficult at first it soon becomes easy. To a student of medicine there does not seem to be very much difference between a temperature of 103° F. and one of 106° F., yet how different is the meaning they convey to the practitioner. In the same way milk percentages at first signify little to one unaccustomed to using them, and where the increase is made by percentages at the milk laboratory often the most injurious combinations are ordered. A friend told me of a physician who was feeding his own child on milk from the laboratory. The formula used was one containing 3 per cent. fat. As the child was not gaining very well he decided that an increase was needed and ordered milk containing 6 per cent. fat. He then abused the laboratory because his baby's digestion had been upset by the milk.

As to how much fat may be wisely given to infants in health, opinions may perhaps differ somewhat. I am not sure that any arbitrary standard can be fixed. Children differ very much in their capacity to digest fats as in other respects; but there is a limit with each child beyond which he may not safely go. If the percentage is raised very much above this for any length of time, disturbances are almost certain to follow. Personally I have never seen any advantage, but often much harm, from raising the fat above 4 per cent., and in my own practice I have fixed upon this as about the limit for the average child.

The physician who assumes to direct the feeding of infants must have some notion of what is proper; must know what he is giving and must appreciate the difference between giving a food which contains 3 or 4 per cent. fat and one containing 6 or 7 per cent. Although the bad results of the higher percentages may not be at

once apparent they are almost certain to come later. Furthermore, simply to raise the percentage of fat seldom relieves chronic constipation; and, finally, whenever there are marked symptoms of either gastric or intestinal indigestion, the fat should be reduced much below the normal 3 or 4 per cent.

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MEDICAL QUACKS, THEIR METHODS AND DANGERS.

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"Where I killed one, a fair square death
By loss o' blood, or want o' breath,
This night I'm free to take my oath
That Hornbook's skill
Has clad a score i' their last cloth
By drop and pill.

"That's just a swatch o' Hornbook's way,
Thus goes he on from day to day,
Thus does he poison, kill and slay,
An's weel paid for't;
Yet stops me o' my lawful prey,
Wi' pills and dirt."

WHEN Burns, in his inimitable satire, selected Death as the one to expose the dangers of "Dr. Hornbook's" ignorant methods, he chose the one who had the best opportunities for accurate observation. The crimes laid by Death at the door of Doctor Hornbook, were terrible indeed, but it is not difficult to duplicate them over and over in the official records of actual crime as found in the proceedings of our Criminal Courts.

In November, 1808, one Samuel Thompson came into Beverly, Mass., and, proclaiming his ability to heal the sick without fail, declared that the country was being ruined by the regular physician. As his experience with the credulous warranted him in believing, there were those, even in enlightened Massachusetts, who took him at his word. Patients flocked to him by the score. Ezra Lovett, Jr., finding himself confined to bed by a cold, sent for the now celebrated Thompson. He came, and, I have no doubt, received his pay in advance. "Dr." Thompson had the patient's room heated as hot as the stove could make it. And the report of the case, found in 6 Mass. 134 *et seq.*, tells us in great detail of the healer's methods:

"He then placed the feet of the deceased, with his shoes off, on a stove of hot coals, and wrapped him in a thick blanket covering his head. In this situation he gave him a powder in water, which immediately puked him. Three minutes after he repeated the dose, which in about two minutes operated violently. He again repeated the dose, which in a short time operated with more violence. These powders were all given within the space of half an hour, the patient in the meantime drinking copiously of a warm decoction which the 'Dr.' called 'coffee.'

"The 'coffee' administered was a decoction of marsh-rosemary, mixed with the bark of bayberry bush. The powders called by the 'Dr.' 'well-my-gristle' and 'ram-cats,' which the prisoner said he chiefly relied upon in his practice, and which was the emetic so often administered by him to the patient was the pulverized plant trivially called 'Indian tobacco,' four grains of which was a powerful puke and cathartic."

The report goes on to relate that the learned physician ordered his patient to sleep in a warm bed, "where he lay in a profuse sweat all night." The next (Tuesday) afternoon more powders of "well-my-gristle" and "ram-cats" were administered in quick succession, washed down by "coffee." On Wednesday the patient's face and hands were rubbed with rum and he was given fifteen minutes of nature cure by exposure to the January winds in the open air. As a reward more ram-cats were washed down by more coffee. With variations this heroic treatment continued until the following Monday, when the "Dr." was specially summoned as the patient insisted he was dying.

Pearlash, "coffee" and "well-my-gristle" were administered in quick succession and the patient was asked how far the medicine had gotten down. "The patient, laying his hand on his heart, answered "*here*," when the "doctor" observed that the "medicine would soon get down and unscrew his vitals." It did. Between nine and ten o'clock convulsions set in, the patient lost his reason, and on the next day, after one week's treatment, Ezra Lovett, Jr., died.

The object of this article is not to point out the history and present status of the law governing illegal practice or the rules governing the trial of a quack charged with manslaughter or murder. Its object is to point out, by concrete example the great dangers resulting from the practice of the quack, and the crying necessity for the enforcement of the laws designed to protect the public against these dangers.

The law books are full of instructive cases, illustrating, among other things, how slowly the courts have progressed in a realization of the fraud and danger always present in the practice of the unlicensed practitioners.

The methods of the old time charlatan can be studied in such cases as Rice *vs.* The State (8 Mo. 561), State *vs.* Schulz (55 Ia. 628), Commonwealth *vs.* Pierce (138 Mass. 165), and many other cases both in this country and in England, too numerous to mention. But the methods of criminal practitioners of this modern day are far more interesting, and show invention and creative genius worthy of a good cause. "Doctor Thompson" and his methods would be scorned by the astute and polished medical fakir of to-day.

THE MODERN CHARLATAN.

As education has become more generally diffused and science more advanced, the medical charlatan has changed his methods to correspond

with the new order of things. The modern endeavor is to imitate the true scientific methods, and, with "a little learning" to make louder claims to specialized knowledge and advanced methods than does the regular practitioner. Strange as it may seem to know that "Dr." Thompson could have deceived anybody even a hundred years ago, the helpless and afflicted in these opening years of the Twentieth Century are victimizd more completely and more artistically than was Ezra Lovett, Jr. Indeed the modern methods of advertising, the rapidity with which the false claims of the charlatan can be disseminated, and the ease with which the post-office and newspaper penetrate every section of the country have given the fakir of to-day a field of operation that "Doctor Thompson" never dared to contemplate.

THE HELPLESSNESS OF THE CHARLATANS' VICTIMS.

As one learns in detail of the methods and dangers of the modern quack, there is at first a tendency to believe that the credulity of mankind is growing alarmingly greater, but a deeper study of the subject shows that the credulity upon which the charlatan relies, is the credulity that arises from weakened powers of resistance, from disordered minds, and from the mirage that such minds see mirrored in the clear sky of hope. The victim of the medical mountebank, by reason of his susceptibilities and infirmities, is in a class to himself and should have the especial care and protection of the State.

The gambler for the most part takes away from his victims only that which the victim can again recover by prudence and industry. The political mountebank may lead the people away from the honest path for a time, but the wandering in time generally proves self-corrective. The religious frauds exist for a season with fashionable following, but in the end he talks to empty benches. The victims of the medical charlatan, however, have nothing like the same chance to retrieve their false steps as the victims of the other fakirs mentioned. The patients of the quack are either hypochondriacs, who remain eternally ill in their own diseased imaginations and furnish a never-failing harvest for the scythe of the charlatan, or else by reason of genuine maladies their power of resistance has gone and the illusions of hope created by marvelous claims and extravagant promises cause them to grasp at every cure-all just as the drowning man grasps at a straw.

In the City of New York, the danger of the charlatan is seen at its worst. The thickly settled neighborhoods where the ignorant foreigner resides are hot-beds of unlicensed and illegal practitioners, while the advertisements unblushingly accepted by a majority of New York newspapers, with their enormous circulation both in and out of the city, furnish the widest possible field for the modern quack, whose very life lies in newspaper publicity.

MEDICAL SOCIETY OF THE COUNTY OF NEW YORK.

The State of New York, in 1806, perceived the necessity of protecting the public against empirical methods in medicine, and organized in that year, by a special charter which continues to this day, the Medical Society of the State of New York with its branch society in each county of the State. The act was entitled "An Act to Regulate the Practice of Physic and Surgery."

In later years these various county societies have, to a greater or less extent, been the only organized bodies standing between the charlatan and his victim. Theoretically, the Police Department and the District Attorney's Office are charged with the prosecution of all offenses, but where life is as complex as in the City of New York, and where the regular departments of the government charged with the suppression of crime are busy with crimes of murder, arson, larceny and the more heinous crimes generally, it is found impossible in practice for these departments to suppress the unlicensed practitioners of medicine. The presence of a body composed of the organized medical profession engaged, with the sanction of the State, in suppressing not only the criminal practitioner who is licensed, but also the practitioner without a license, is a salutary force in the community and commands, I believe, the respect and confidence of the public and acts as a constant deterrent to the wrong-doer.

The Medical Society of the County of New York for a great many years has maintained a separate legal bureau for the suppression of the unlicensed and criminal practitioner. A staff of well-trained detectives and agents are constantly investigating complaints and procuring evidence where the law is being violated. The method of procuring evidence by detectives is unavoidable because the victims of the charlatan are most reluctant to appear in court as complaining witnesses. It generally brings humiliation and disgrace upon them, exposes their maladies, real and imaginary, to the public, and is in itself a confession that they have been the willing dupes of preposterous frauds.

By means of the efforts of the Medical Society of the County of New York hundreds of cases involving a violation of the Public Health Law have been presented to the criminal courts in New York City. Since 1900, the legal department of that Society has been in charge of the writer, and it has been his duty to institute these prosecutions, and by the courtesy of the District Attorney of New York County, to present the evidence to the various City Magistrates and to the Court of Special Sessions.

The charlatans operating in New York City may be divided into the following classes: (1) Those who prey upon the consumptive poor; (2) Advertising "Specialists for men only;" (3) Occultists; (4) Nature Cure and Water Cure doctors; (5) Midwives; (6) "Osteopaths," "Osteotherapists," "Somatopathists," "Mech-

ano-Neural-Therapists," "Vitopaths," and scores of others of similar ilk, whose chief object seems to be to seek refuge in an imposing title. To these classes must be added the men and women who assume the names of deceased physicians and who practise under their diplomas. Others still boldly use their own names and falsely claim to be members of the medical profession, in the hope that in a city of four millions of people and many thousands of doctors, they may be overlooked and left unmolested.

The cases now to be mentioned, as illustrating the actual methods of each of the classes mentioned, were all presented to the courts in New York City by the Medical Society of the County of New York.

"OCCULTISTS."

The fakir who poses as a master of occult mysticism and esoteric philosophy finds a great many lovers of the mysterious willing to listen to his blandishments. In May, 1901, a complaint was received against "Doctor A. de Sarak," of 413 West Fifty-seventh Street. An agent of the Society called upon the "doctor" and was received with oriental salaams and greetings. The agent and the learned occultist soon got down to business and the doctor's inevitable card was presented to his supposed patient. It read as follows:

"Doctor A. de Sarak, Oriental Scientist, General Delegate of the Scientific Academy of 'Sauveteur' of Paris, Member of the Oriental Society of Thibet and Calcutta, etc."

"Consultations of Oriental Sciences, on Magnetism, Double Vision, Concentration, Telepathy and Palmistry. Every day, except Sundays, bet. 3 and 5 P.M. 413 West Fifty-seventh Street, New York. Consultations by correspondence. English, French, Italian, Spanish, Portuguese and Russian Spoken."

This wonderful assortment of methods and languages, together with the impressive display of decorations, medals and ribbons, soon led to a contract. The patient complained of headache, chills and sleeplessness. The doctor produced an ophthalmoscope and thermometer, and after making a few mysterious gestures and uttering weird incantations, pronounced the trouble as "nervous neurasthenia." He recommended a drug of unpronounceable name, and suffered the patient to depart after extracting $3 for the treatment. The "doctor" tried his case most vigorously—in the newspapers—but in the Court of Special Sessions pleaded guilty and without a murmur pain a fine of $50. A year or two afterward, clad in the same gorgeous attire, the "doctor" appeared for a brief season at one of the fashionable hotels in the city, where many respectable people accepted him at his own valuation. But his former experience served him in good stead, and he soon folded his tents and silently stole away.

The feminine variety of this interesting form of fakir is illustrated in "Madame Marcella Bryan," convicted on January 16, 1903. I shall let her tell her own story. Scorning the services of a lawyer, she addressed the learned judge as follows:

"I am a maker and seller of magic potions. My chief production of mysterious alchemy is 'Sympathy Water.' This one washes with and immediately does it take the devil out of one. That is why I have the great reputation and why Madame Bryan is known the world over. Shall I tell you more? Yes? I am also a clairvoyant, and I know magic and am of the mysterious spirit. I help people in business trouble. I help the maiden, the wife, the husband, the lover in the troubles of the heart. I can do anything; but practice medicine —never."

But alas for this wonderful healer, Mr. Justice Olmstead, speaking for the Court, pronounced her guilty, and forthwith she took her place along the great multitude of persecuted scientists.

MIDWIVES.

The midwife has no recognized status in the laws of the State of New York. As long as she confines her activities to the sphere that custom for generations has allotted to her, it has not been the policy of the medical profession to disturb her. But as a matter of fact, there are no bolder criminal practitioners in New York City than are to be found among the midwives. It is safe to say that a large majority of them will undertake, without hesitation, to perform criminal operations or prescribe drugs for a criminal purpose. Over fifty convictions for such offenses have been secured recently by the Medical Society. Many deaths occur every year as a result of the ignorance and criminal practice of the midwives of New York.

In the last ten days, we brought to the attention of the Courts, Yetta Prince, an East Side midwife. She undertook to relieve a poor woman of sterility. Sixteen treatments resulted in a double pyosalpinx, followed by an operation and the removal of both ovaries and the tubes. She was sentenced to a term of imprisonment.

UNWARRANTED USE OF TITLE "DOCTOR."—"DIPLOMA MILLS."

A most interesting fraud is the man who boldly assumes the title of doctor without any claims whatever to a medical education. The most brazen and successful practitioner of this kind that the Society has ever dealt with is "Dr." Charles Conrad, convicted April 21, 1904.

On April 7 he wrote to Dr. J. McPherson Scott, Secretary of Board of Medical Examiners for the State of Maryland, asking permission to register as a physician in that State. In his letter he said: "I am not licensed in any State, but I hold a diploma from the 'Vetus Academia Physio Medica.'" He asked to be permitted to register in Maryland without going to the trouble of appearing there in person.

This letter was sent to the Regents of the University of the State of New York, who in turn forwarded it to the Medical Society of the County of New York. Upon investigation we ascer-

tained that the defendant was formerly a Norwegian sailor with no pretense to medical knowledge. The "Vetus Academia Physio Medica" was a college of which he was the president and faculty. He printed elaborate diplomas on parchment, couched in wonderful Latin, but he was willing to sell one to every applicant for $500.

At 56 West Sixty-fifth Street, he was conducting the Platen Institute, with two branches in Harlem, each branch being in charge of a "graduate" of his celebrated school, and supplied with a staff of nurses. Almost any form of treatment desired was administered. This man went so far as to have a bill introduced into the last Senate of New York State (Bill No. 983, March 21, 1904) entitled a bill "To define and regulate the practice of Osteotherapy." Of course, "Dr." Conrad was the founder of the great healing science osteotherapy.

His card surpasses criticism and description.

"Dr. C. Conrad, Founder, President and Medical Director of Vetus Academia Physio Medica (Inc.), Founder, President and Director in Chief of the Platen Institute (Inc.), Lecturer on Psychology and Physiology in the Old Physio Medical College; Founder of Osteotheraphy, Demonstrator and Lecturer on Osteotherapy at Platen Institute; Founder and President of New York Society of Ostheotherapeutic physicians; Founder and Editor-in-Chief of the Twentieth Century Journal in Osteotherapy. Vice-President of the American Association of Physicians and Surgeons. Telephone, 2204 Columbus. By Appointment Only. Office, 56 West Sixty-fifth Street, New York, N. Y."

None of these institutions existed save in his own vivid imagination. A similar case is that of Joseph Rohrer, convicted February 17, 1902, for practising without registration and on May 19, 1904, for using the title "M.D." as President of "International Massage and Movement Cure Institute," which he advertised in over fifty papers and described in an elaborate book of 61 pages, containing many reproductions of the learned doctor in various professional poses.

Closely akin to this form of fraud is the man who assumes the name of some licensed physician who has recently died or removed from the community. The most recent conviction of this sort was a Russian who was a former valet to a London physician, and who, at the latter's death, stole his diploma and attempted to practise in this country.

In the East Side district of New York, there have been several instances of the diploma of a deceased physician bringing at auction more than all the other assets of the estate. An advertisement recently appeared in a New York newspaper offering $1,000 for the diploma of a registered physician in this State who had not been dead over five years.

PRACTITIONERS OF OSTEOPATHY AND THE ART OF MANIPULATION.

The "Osteopath," the "Mechano-Neural Therapist," the "Somatopath," and other practitioners who attempt to cure disease by manipulation stand in a class by themselves. The cult of osteopathy has made considerable progress in this country within the past ten years in States where the standard of medical education is low. Many of the States of the Union have legalized the practice, but in New York and New Jersey and the Eastern States generally, where a high standard of medical education is maintained, the legislatures have persistently refused to grant them any recognition.

The osteopath claims that disease results from a disarrangement of the anatomy, and he includes in this disarrangement of the organs and circulation of the body, particularly nervous circulation as a result of local disturbances and influences. He insists that the proper method for cure is to remove the inflammation or dislocation by manipulation, massage, and kindred methods without the use of drugs.

A small percentage of these practitioners are, no doubt, sincere in their claims, but a great herd of them throughout the United States take up this system of healing because of the ease with which it may be mastered and the short course of study necessary to obtain a diploma. A four years' course in a medical college is now requisite in the State of New York, whereas an osteopathic degree in other States may be secured in from one to two years, or less, according to the character of the institution.

WHAT IS THE "PRACTICE OF MEDICINE?"

This cult is responsible for the prevalent belief that to practise medicine is to give drugs. The courts of original jurisdiction in New York State have uniformly held that the practice of medicine is the practice of the healing art generally, and anyone who undertakes to diagnose and cure disease is practising medicine within the meaning of the statute. None of the higher courts have yet passed upon this question, and until such a decision is obtained, the law on this point will be in confusion. One of the resulting harms from the presence of this system of healing in a community is the encouragement it gives to unlicensed practice of all sorts where drugs are not administered. The practitioner who administers only electrical treatment or baths or massage or magnetic healing is as much entitled as the osteopath to claim that he is not practising medicine because he gives no drugs. All of these practitioners unhesitatingly undertake to cure the most serious forms of diseases, and hope to escape the penalty of the law because they avoid the use of medicine. If such a decision ever comes, the most appropriate comment on it that could be made is the comment made in 1806 in the report of the Thompson case previously referred to and found in 6 Mass. 134.

"It is to be exceedingly lamented that people are so easily persuaded to put confidence in these itinerant quacks, and to trust their lives to strangers without

knowledge or experience. If this astonishing infatuation should continue, and men are found to yield to the imprudent pretensions of ignorant empiricism, there seems to be no adequate remedy by a criminal prosecution, without the interference of the legislature."

The enlightened medical profession to-day makes use of all rational methods of healing, including suggestion, manipulation, massage, and electricity. It is the height of injustice in view of this fact to say to the regular physician that he must acquire a knowledge of the healing art by a four years' course of study and at the same time permit the osteopath and all of his ilk who follow a short cut to the healing art to practise their cults without molestation or conditions as long as they do not administer drugs. As was said in a recent editorial in the New York *Times* "A course in medicine and surgery is expensive, and it takes a lot of time, while a varied assortment of pseudo-religious and pseudo-philosophic phrases can be learned in a few days by any man or woman with a disinclination for honest work."

WATER CURE.

The "practitioner" who pins his faith to water, styles himself by various titles ranging from Nature Cure to Balneotechnic. The latest specimen of this variety is "Dr." Charles F. Starken, who carried on a thriving business at Fifty-second Street and Broadway before his career was cut short by the unsympathetic agents of the Society. His card read as follows:

"C. F. Starken, Physician of Natural Cure and Balneothechnic, cures all kinds of Diseases without Medicine or instrument. Gives all kinds of massage and Heat Gymnastics, Magno-Electro and Hydropathic Treatments, Also all kinds of Cure-Baths, Herbs, Mineral, Sulphur, Iron, Lithion, Pine-needles, Aromatic and all Medicated baths. Specially for Blood purifying and good Complexion. Moussir, Steam, Hot Air, Vapor and Astringent Baths, For Males, Females, and Children. Prices Liberal. Dr. C. F. Starken, Consultation: 9-10 A.M.; 2-3 P.M., 6-7 P.M. Fifty-second Street and Broadway, New York."

After the "Doctor's" methods had been called to the attention of the Medical Society by the New York Society for the Prevention of Cruelty to Children, two agents of the Society, both women, sought the professional services of the celebrated water-cure specialist. They described a variety of symptoms and pains, but the doctor was equal to the emergency and his diagnosis showed several serious complications. He scorned to cure them with drugs, but proceeded to administer a variety of baths, followed by massage. One of the agents in Court described her experience as follows:

"I told him I was troubled with fainting spells and pains in my arms and shoulders. He asked me to remove my clothes, which I refused to do. He examined my chest. He took hold of both of my arms. I do not know what he did, but I screamed, it hurt me so. I said, what do you think is the matter with me? He said I had stagnation of the lungs; perhaps he meant congestion of the lungs. He said I was troubled with neuritis."

In some unimportant particulars, the learned gentleman's testimony contradicts the testimony of the People, but I am sure his own story is more interesting than any that could be framed for him. This is his story as taken from the minutes of his trial, March 31, 1904:

"I said, what can I do for you? She said she would like a treatment. I said what is the matter with you? I said I do not want to give any treatment until I know what is the matter with you. I said this is not a Turkish bath. I said you might drop down here dead. She said she had a pain here and a pain there, and much pain all over. I said, is there a name for that and a that for that; I said there is a name for every kind of disease; if an organ is affected we call it that name, and if this organ is affected we call it that name. She said she would like to take a treatment and asked how much it was. I said $3. She left. She said she would come again. My nurse let her in again. She said she wanted to take my treatment. I said, wait a moment, and a woman will come and help you along. My nurse came along and brought her into the steam bath. I said, are you hot here? She said, yet it is quite hot. I felt of her temples, how her temperature was. Then the nurse took her to a bath and there was pine needles in it to clean the skin. Then I gave her a douche. My nurse brought her back to the table and wiped her off. When I was through with the other people I went back to the room where she was. I started to massage her. I must test the muscles—."

The Court. "Don't give us a lecture on that."

The witness continued. "I gave her a rub. She asked, What is the matter with me? I said there is a lot of uric acid in you. She said, Can you give me any medicine? I said no, I give no medicines at all. I said I did not think the treatment would do her much good, because she was too timid."

Q. "Was anything said about cirrhosis of the liver?" A. "No, sir. She said she had pains. And I said if she had a pain there it could not be cirrhosis of the liver."

His discourse did not have the desired effect, for Mr. Justice Wyatt, speaking for the Court, said:

"The sentence of the Court is that the defendant shall pay a fine of $100, and in default of payment that he shall stand committed to the City Prison for a term of thirty days. You will have to stop this business."

FRAUDS, WHO PRACTISE ON THE CONSUMPTIVE POOR.

Of all invalids the consumptive seems to believe more firmly than all others in his ultimate success in combating disease. The unscrupulous quack takes pitiless advantage of this weakness of the consumptive, and in his advertisements makes greater claims and pretensions perhaps than any other medical fraud.

In support of this assertion, I quote from a statement from S. A. Knopf, M.D., of New York City, to whom the "International Congress to Combat Tuberculosis as a Disease of the Masses," at Berlin, awarded the international prize for the best essay, on July 31, 1900. In a statement to

the Charity Organization Society of New York, Dr. Knopf says:

"How many poor consumptives have lost their last little reserve fund by giving everything they had for a dozen bottles of the "sure and quick cure" only those who come in contact with them know. How unscrupulous some of these charlatans are in their method of procuring certificates of cure, which they then publish as bait to the unfortunate help-seeking sufferer, is something which can hardly be believed. Let me tell you of one instance: A poor woman in the last stages of consumption came to me seeking advice. When asked for the name of her former medical attendant, she confessed that she had been treated for a number of weeks by a quack concern, and now, her means being exhausted, she was made to understand that they would not continue to treat her unless she would give them a certified testimonial that she had been thoroughly cured of her disease, which had been pronounced an advanced case of consumption by prominent physicians. This poor sufferer had not derived any benefit whatsoever from the treatment, and as a result her conscience would not permit her to become a partner to such a fraudulent procedure.

"Some of these unscrupulous concerns resort to absolute fraud to beguile the public by using the name of the great scientist and benefactor, Prof. Robert Koch, of Berlin, as though he were associated with them in their business and treatment. They advertise his picture beside that of an individual with a similar name, and are heading their advertisements as 'Professor Robert Koch's Cure.'"

One of the advertisements referred to by Dr. Knopf reads as follows:

"*A Statement of Dr. Edward Koch.*—This is a picture of Dr. Edward Koch, the inventor of the Koch Inhalation Apparatus. He can be seen at his office, at 48 West Twenty-second Street, New York, where his diplomas are on exhibition; also his membership to the Tuberculosis Congress, which he attended in London last July. He has also as further evidence of his identity one of the group photographs taken in London, showing the two hundred physicians who were members and delegates at this Congress; of all the pictures the most prominent is that of Dr. Edward Koch.

"In the official catalogue of this Congress, on page 41, the names of Drs. Edward and Robert Koch can be seen in the order in which they were registered, Dr. Robert Koch coming first and Dr. Edward P. Koch next."

During the past year the fraud referred to by Dr. Knopf as Professor Robert Koch's Cure has been fully exposed in the New York *Herald* on evidence submitted by the Medical Society of the County of New York. From their own advertisement, it will be seen that everywhere the impression is given that Dr. Edward Phillip Koch and Dr. Robert Koch are in professional relations with each other. Their so-called cure has offices in Buffalo, Chicago, Boston, Pittsburg, Altoona, Philadelphia, Cincinnati, Baltimore, Washington, Rochester, St. Louis, Newark and other cities. Dr. Koch is advertised in connection with the various establishments. In the New York establishment the Society has never yet been able to capture Dr. Edward Phillip Koch, but he was recently brought to justice in the District of Columbia. He was, in May, 1904, convicted of practising medicine without registration.

Dr. Robert Koch, of Germany, has written to Dr. S. A. Knopf protesting most bitterly against the use of his name by quacks and charlatans, and denying, of course, the slightest connection with any so-called cure or with any physician of a similar name anywhere in the world. As long as registered physicians can be induced to take part in such deception it will be difficult to close this establishment by law, but the conviction of Dr. Edward Phillip Koch and the wide publicity given to his methods will greatly lessen the dangers of such establishments.

SO-CALLED SPECIALIST IN "DISEASES OF MEN."

Almost as dangerous is the so-called specialist in diseases of men. Certain newspapers in New York print columns of their advertisements without apology to the public for intruding such filthy printed matter. The methods of these quacks are various. Most of them advertise in the name of a registered physician and then employ green youths and unlicensed practitioners to meet the patient after he calls. As the law as present constituted does not require a physician employed in an advertising institution to make known his identity, it is difficult to trace out the identity of the practitioner in any of these concerns. The employer generally keeps them moving and does not permit a practitioner to remain in any one office long enough for very much information to be found out about him. Other offices advertise in the name of men not licensed to practice, but put in charge of their office in New York a licensed practitioner.

The writer is reliably informed that one institution of this character in New York City made over $200,000 last year. I know of several instances where, by making a false diagnosis and frightening the patient into the belief that he had a loathsome disease, the patient has been induced to pay over as high as $2,000 for a few treatments. The law must be amended so as to compel every practitioner in an advertising institution to make known his identity just as every dentist in any advertising dental parlor is required by law to post his name above the chair where he operates.

In brief, such is the work of the Medical Society of the County of New York. With its professed antagonism to so many powerful yet corrupt influences, it has an abundance of enemies, many of them occupying the seats of the mighty. In these enemies it finds the highest testimonial to the efficiency of its work and the greatest incentive to a continuance of its labors.

In 1893, when the law regulating the practice of medicine assumed its present form, the work of the various County Medical Societies in New York State received its most complete recogni-

tion by the State, when a provision was inserted in that law authorizing the return of fines to the County Societies as follows:

"When any prosecution under this article is made on the complaint of any incorporated medical society of the State, or any county medical society of such county entitled to representation in a State society, the fines when collected, shall be paid to the society making the complaint, and any excess of the amount of fines so paid over the expense incurred by the said society in enforcing the medical laws of this State, shall be paid at the end of the year to the county treasurer."

As a matter of fact, however, the return of fines resulting from prosecutions instituted by a medical society is inadequate to meet more than a small part of that society's expenditures in this work. Again the whole principle of returning fines to societies engaged in the prosecution of crime, however well meant in theory, is vicious in practice and should not be continued by the legislature. Neither should the great State of New York put upon the shoulders of the medical profession the burden of supplying the funds with which to carry on a work to protect the citizens of the State. The treasury of the Medical Society of the County of New York, the income of which consists entirely of the dues of its two thousand members, is continually being depleted by the demands made upon it by the prosecutions it institutes. It is doubtful if, with the increasing demands made upon its legal department, the work can be continued as at present. Realizing this, the Medical Society of the County of New York and the Medical Society of the County of Kings have instituted a movement that seems certain to result in the repeal of the laws giving the fines to the Society and substituting in lieu therof a direct appropriation from the public treasury of an amount sufficient to pay the actual expenses of the Society in suppressing and punishing the charlatan. This movement has the unqualified approval of the public authorities and the sympathetic endorsement of the magistrates and judges in the City of New York, who are more familiar than anyone else with the necessity of continuing and improving the facilities for the detection of such crimes as have been described in this article.

ADDENDA.

To the Editor of the MEDICAL NEWS.

DEAR SIR: The counsel of the Medical Society of the County of New York, recently read a paper before the Society of Medical Jurisprudence entitled "Medical Quacks, Their Methods and Dangers." The newspapers have given wide publicity to the crying evils of the medical fakir pointed out on that occasion.

On one point alone does there seem to be any misapprehension. Several papers have asked why, with many thousand charlatans now practising in this city, the society has succeeded in convicting in five years only about 500 of them.

At a meeting of the Comitia Minora of the Medical Society, recently held, it was resolved that an official statement be made to the press of New York City giving the reasons why the percentage of cases taken up by us is so small.

We beg to present these reasons as follows:

1. Lack of funds. There are 2,000 members of the medical profession in the New York County Society. In order to make our work as effective as possible, the scientific features of our society have been curtailed in order to devote our funds to the suppression of the dangerous quack. For the past five years we have expended every available dollar for this purpose.

2. Inherent difficulties in the nature of prosecutions. In rarely one case out of a hupdred will the real victims of the charlatan consent to give evidence. They report their cases to the society on condition that they are not called as witnesses. This is to avoid the exposure, humiliation, and disgrace which in many instances would follow publicity. This necessitates the society procuring its own evidence at great expense against every charlatan it prosecutes.

3. Radical defects in the medical law. We have no definition in this State as to what constitutes the practice of medicine. Until the legislature gives us a satisfactory definition great uncertainty will exist. We have repeatedly asked the legislature for such a definition, and have been as often refused.

4. Failure of the newspapers to cooperate. The modern charlatan could not exist without publicity given his advertisements by the press. If our New York papers would refuse advertisements for the sale of drugs for a criminal purpose, illegal lying-in establishments, and the distressing advertisements of the so-called specialists for diseases of men only, and the "consumption cure" frauds, it would not be difficult for the Medical Society, even with its present lack of funds, to rid the community of the chief offenders. These vicious advertising charlatans draw their recruits from innocent victims attracted by the advertisements unblushingly received by many New York newspapers.

COMITIA MINORA MEDICAL SOCIETY OF THE COUNTY OF NEW YORK.

New York, October 16, 1904.

ANAL FISSURE.[1]

BY WILLIAM M. BEACH, A.M., M.D.,
OF PITTSBURG, PA.

THE object of this short paper is to consider etiological factors, some of the reflexes, and finally the treatment of irritable ulcer of the rectum.

The nomenclature may be disposed of as that of anal fissure, painful, irritable or concealed ulcer of the rectum. The shape of the sore is usually long and narrow, lying between two folds; it is frequently club-shaped, sometimes round, a shape which is usually the signal of a submucous blind fistula or the concealed type.

The location is in one of three planes in the anal rectum, the special point affected bearing an important relation to the symptoms produced, especially that of pain. The lesion may be over the site of the internal sphincter, between the sphincters, or over the external sphincter extending into the skin. The stool passing over a solution of continuity at the internal sphincter will not cause any particular discomfort during the act, but in a few minutes is followed by a

[1] Read before Pennsylvania State Medical Society, September 28, 1904, at Pittsburg, Pa.

dull aching reflected in the back, lasting two or three hours. An ulcer located between the sphincters, that is disturbed, evinces severe smarting and burning, continuing most of the day. The victim becomes nervous, irritable and irascible. If the wound presents within and below the grasp of the external sphincter, the pain will be severe, of a tearing nature and excruciating, and may completely disable the patient. The hypertrophied muscle spasmodically contracts, adding to the suffering. On account of these trying seances, the victim becomes constipated by deferring the call of nature from time to time.

Again, the location of a fissure may be in any quadrant and plane of the anal circle; and this leads us to consider the first object of our paper, viz.: Some of the etiologic factors determining the location as well as the disease itself.

If we were to consider causes for all ulcers to be found in the anal rectum, it would be necessary to review gonorrhea, syphilis, chancroid, tuberculosis, etc., but our purpose is to discuss the simple traumatic type.

The mucous membrane in the anal region is very delicate and consequently easily wounded by the passage of hardened feces, the introduction of a syringe tip or unskilful use of specula. Fissures may follow operations for removal of hemorrhoids, fistula and adenoids. Some authors state that painful ulcer is more frequent in women on account of parturition; the fetus presses the rectal walls against the bony background and lacerates the mucosa. This may account for the fact that a greater number of fissures in women occur in the anterior quadrant. It is my observation that ulceration there is preceded by severe perineal laceration, the repair of which is neglected by the obstetrician. Nature's attempt at repair gives evidence of an unusual amount of inflammatory discharge conducing to keeping alive the rent in the rectal mucosa and producing sphincteralgia. Fissure in the anterior quadrant is less frequent in the male, but when it does occur is most intractable, owing to the mobility of the area during locomotion.

Proctitis is generally a concomitant symptom of fissure in which we find the presence of feces that finds lodgment in one of the anal pockets. The pockets are effaced during the act of defecation, as the levator muscles lift the anal canal over the protruding column. A foreign body already lodged behind the crypt, and causing the valve to swell, prevents the normal effacement and invites further damage by a fecolith or by pressure from the column itself. By a further study of the mechanics of defecation, we may determine causal factors of fissure. The line of axis changes in various planes of the rectal cavity. In the ampulla, the axis directs postero-anteriorly, to change analward to antero-posteriorly just at the site of the anal pockets, which form with the papillæ the floor of the rectal pouch. By virtue of the angle of the two axes at this place, the object to be expelled would most likely be caught in the pocket in whatever quadrant it might happen to be located. The chief point of predilection is in the right or left posterior quadrant. Various theories are given to account for this phenomenon. A member of the American Proctologic Society advanced the idea that in the posterior and anterior commissures the fibers of the sphincter muscle decussate in a most delicate manner and approach very closely the mucosa, which fibers rupture and hold apart the torn mucosa, made so by the expulsion of hard objects in the fecal column. This idea seems to me rather tenable, but we must consider in connection with it Mr. Ball's theory that tears are most likely in the commissures owing to the fact that the anal pockets or crypts of Morgagni are most highly developed there. Fecal matter lodges in these pockets, and, being pressed upon by subsequent discharges, tears the edges of the valve,—the beginning of a painful history. Further observation by Tuttle has shown a well-developed crypt on each side of the rectum, occassionally the site of fissure.

In a certain umber of cases the foreign substance will infect a pocket and burrow its way under the mucosa, a condition commonly known as a blind fistula, but which I call a concealed ulcer. Sometimes they will kindle a suppurative process between the planes of anal fascia, and open in the skin about one-half inch from the anal orifice. In this connection I must emphasize the importance of fissure as a causal factor in the development of peri-rectal abscess. While I agree with the Ball theory, I must confess to the belief that most fissures are due to direct injury, both from within and without, and that the origin may be found in internal hemorrhoids, a pathologic condition that further predisposes to rupture of the mucosa.

In order to note some of the reflexes, we should observe the symptoms objectively and subjectively—moreover, the primary and secondary stages of the disease or, as Gant puts it, "The fresh wound ending with the inauguration of the second stage, sphincteralgia, which is the pathognomic symptom of this disease." The schedule of symptoms, as given by the same author, includes: Pain and sphincteralgia, constipation, flatulence, hemorrhages, discharges, pruritis, reflex disturbances, change in the character of feces, proctitis, melancholia and nervousness.

It is not my purpose to discuss the entire list, but to call especial attention to pain and the reflexes. A newly made fissure is comparatively free from pain. The category of subjective symptoms may be limited by a sense of fulness and slight burning. But when the stage of sphincteralgia is reached and the so-called "sentinel" pile is formed, severe pain of a tearing nature follows a stool, only to subside in two or three hours, when the paroxysms of contractions cease. If the ulcer be irregular and located be-

tween the sphincters, the nagging and sense of weight may continue the entire day. The pain is usually reflected to the sacrococcygeal region. These symptoms appear in less degree, as evidence of the high location, and in concealed ulcers.

This type of ulcer is easily overlooked; in fact, it is difficult to locate, except by the most approved method of anoscopy. I have a case on record, a male, who had an anterior fissure of this kind, forming a complete fistula without a history of abscess. Patients suffering from fissure are usually very restless, high-strung and melancholic. The severe pain, though not commensurate with the pathologic condition, renders the belief that they are suffering from cancer or incurable disease.

The reflex phenomena become quite interesting when we consider the anatomic distribution of nerves of the parts: the anal branch of the internal pudic nerve gives off numerous end organs in the anal pilasters and Hilton's line, forming the rectal sense of Stroud. These nerves are exceeding sensitive and, when exposed by a laceration, become congested and swollen. By their intimate relationship to the spinal plexus and sympathetic systems, both local and remote reflexes are easily understood. The bladder, prostate, urethra and testicles, ovaries, tubes and uterus are apt to bear the onus of direct disease, when, in fact, the pain of fissure is reflected to these organs. Again, we may mention such remote reflexes as pain in thighs, legs and heel, back of neck, and flatulent dyspepsia. I recall a young man whom I cured of this form of dyspepsia by removing an irritable ulcer of the rectum. He had been limited to a milk diet for a year, and was receiving special treatment of the stomach when referred to me.

To locate an ulcer rarely requires the use of a speculum, except in very obscure cases, where the lesion is behind one of the crypts. The trained digit, inserted to the white line, will suffice in the majority of instances. If the classical "sentinel" pile is present, as it is not in all cases, by separating the anal folds there will open to view the grayish granulations and indurated margins of an ulcer. I must herewith urge the importance of a direct examination, since the patient is liable to mislead the doctor in diagnosis. Again, the mistake is made by many in digital examination of inserting the finger too far. Most diseases of the anal rectum are found between the ental and ectal sphincters.

The problem of treatment and cure of anal fissure will depend upon the stage of the disease,—whether we shall invoke medical or surgical measures. In the first stage, a laxative and topical use of ichthyol will generally suffice to cure. But if the sphincteralgic stage has been inaugurated, nothing short of surgical procedure will avail. Since the introduction of local anesthesia, the danger of general anesthesia can be dispensed with and the associated terrors eliminated. The operation may be done in the office, and the patients lose no time. To overcome the paroxysmal contractions is the secret. It is entirely unnecessary to "stretch the sphincter" in order to put the muscle at rest. No matter how much you divulse, short of tearing, retraction will occur in twenty-four hours. The safest and most rational procedure is to cut a few fibers directly back of and beneath the ulcer, then cut through the base of the lesion; the second incision should extend above and below the margin of the sore, then the indurated margins should be trimmed and all the granulations curetted. By the use of a one-tenth per cent. solution of beta eucoine, about 100 drops injected beneath the ulcer, or by sterile water anesthesia, This operation is painless, and results are speedy and certain. Before doing this operation care must be taken to determine the presence of sinuses, so often found. These should be opened first and the technic executed as described. The subsequent care consists chiefly in keeping the margins of the wound apart, by daily inserting the finger and the application of ichthyol or silver nitrate, gr. xx to the ounce to a healthy granulation.

In 1896 I advocated the use of the electrocautery knife as a safe and painless practice, a method which has been used quite extensively since among proctologists.

THE PHYSICS AND CHEMISTRY OF DRUG ACTION.[1]

BY EDWARD C. HILL, M.D.,
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DRUGS in general act, first, as mechanical protectives; second, as modifiers of osmosis ("salt action"); third, by combining with compounds in the blood and secretions (acids, bases, antitoxins); fourth, by direct combination with or catalytic action on protoplasm; fifth, by reflex influence (bitters, stimulants, antispasmodics). The action of medicines is primary (unaltered drug) and secondary (compounds formed in body), direct (local) and indirect (remote). The effect of drugs is qualitative, not quantitative (Cushny), increasing or depressing activity, but not altering its form. No new function can be created by any substance (Sollmann). Most drugs have an elective affinity for certain types of cells, comparable to the selective tendency shown by toxins and the products of digestion. Thus strychnine and the toxins of tetanus affect chiefly the motor nerve cells; morphine depresses the brain and stimulates the spinal cord; coniine, gelsemine and sparteine paralyze the endings of motor nerves; strophanthus acts primarily upon muscle tissue (Potter) by direct contact through the blood. Prussic acid is a general protoplasm poison. The thyroid attracts arsenic and iodine; the liver, iron.

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Each cell is supposed to possess many and varied receptors, which, by appropriate combination with haptophores adapted to their metabolic requirements, maintain nutrition and function. (McFarland). Foreign haptophores, as of drugs and poisons, are more or less isomerically identical with some normal nutrient haptophores. Ehrlich holds that alkaloids, antiseptics and antipyretics do not enter into the composition of protoplasm, and so fail to call forth a specific antigenetic action (antibodies). Gowers is a believer in dynamic therapy, *i.e.*, increase or decrease of metabolic processes by catalytic "contact of molecules of allied constitution with latent energy on the point of release, so held as to blend with that which is being set free in the living tissues." The action of large doses is generally the reverse of small or moderate ones. Strychnine first stimulates and finally paralyzes by overstimulation the large multipolar ganglia in the anterior columns of the spinal cord (Potter). Hydrocyanic acid first stimulates, then paralyzes the central nervous system (Cushny). Bromides may produce transient excitement and intoxication (Bartholow). Belladonna in small doses increases intestinal peristaltic movements (paralysis of inhibitory fibers of splanchnics), whereas moderate doses completely arrest these movements (White). Small quantities of opiates make the sleep lighter than usual. General anesthetics excite the brain and heart at first. Very minute quantities of antiseptics may stimulate the development of germs (Roger). Aconitine in contact with some nerve structures induces the production of excess of energy; on others arrests all action (Gowers). Naturalistic medication furnishes us with means capable of intensifying or attenuating reactionary phenomena, when these are insufficient or excessive (Roger). The tendency of modern therapeutics is toward smaller and more frequently repeated doses (White).

The effects desired for medicines may be obtained at the area of contact with the skin or mucous membrane, or in the blood, affecting also the nerves and muscles, or on the organ which excretes them (concentration here)—one or two or all. The law of dissolution is that when a drug affects functions progressively, those first affected are the highest in development; that is, the last acquired by the individual and the last to appear in the species. Thus chloral is a general protoplasm poison, but affects the brain first, hence is used as a hypnotic.

The period during which a medicine stays in the system varies greatly. Many volatile remedies, such as ether, pass out of the body within an hour after taking, whereas a single dose of arsenic may not be entirely eliminated for several months. It appears to the writer that the alterative effect of mercury and other heavy metals may be due to their long-continued presence in the body, augmenting retrograde metabolism in virtue of their foreign nature. The accumulative action of drugs is shown when administered for some time when absorption is more rapid than excretion. It is probable that when digitalis or strychnine accumulates in the tissues to a certain amount, the renal vessels contract and excretion is arrested (White). The action of drugs and the doses required are greatly modified by the presence of disease. Enormous doses of opium are well borne in peritonitis. The conformation of the drug molecule has as much to do with the action of the remedy as has its elemental composition. In general, drugs that are closely allied chemically have a similar effect on the organism. The methane derivatives, as a class, are cerebral depressants, their toxic effects increasing with the homologous series, except as modified by insolubility; the presence of hydroxyl and acid-forming groups lessens their toxicity (Cushny). The alkaloids show many therapeutic peculiarities. Thus, jaborine is isomeric with pilocarpine, but exactly opposite in action, and a specimen of the latter drug adulterated with the former may have no therapeutic effect. Hyoscyamine differs from atropine only in the arrangement of the atoms of the molecules, but the two remedies have a slightly different action. Strychnine changed to methyl-strychnine becomes a paralyzant (White). By dehydration of morphine into apomorphine the cerebral depressant action is much reduced, while the stimulating effect (particularly on the vomiting center) is retained. Differences in pharmacologic effects may depend on physical characters (volatility, solubility) rather than chemical combinations. Most volatile substances are more or less irritant, and are used for their local or reflex effects.

Ions.—In the fluids of the body inorganic compounds in general break up largely into electrically charged parts, namely, anions and cations. In a one-per-cent. solution of NaCl only about one-fifth of the salt is present as molecules (Cushny). These ions serve as conductors of electricity and so are absolutely essential to protoplasmic activity. The function of the ions (Ott) is by their presence in definite proportions in each tissue to preserve the labile equilibrium of the colloid material of the protoplasm on which its activities depend. The positive and negative particles must be potentially equivalent (Mathews) in this electric substratum, hence there must be a mixture of salts in proper proportions. Predominance of anions increases motor activity, and *vice versa*.

The excised frog's heart does not continue beating when supplied with a solution of any non-electrolyte. The contractions are maintained longer in sodium chloride of a certain strength than in the solution of any other single salt (Ringer). Calcium antagonizes the slightly poisonous effect of sodium ions (Loeb), and the addition of a trace (1:1,000) of a calcium salt

to a NaCl (and KCl) solution maintains cardiac contractions much longer than with the sodium salt alone. Bivalent and trivalent cations commonly antagonize univalent cations, the neutralizing effect being proportional to their valency. Univalent cations tend to keep colloid proteins in solution, while bivalent and trivalent cations precipitate them, thus counterbalancing each other and so preventing excessive or deficient fluidity in the tissues (Hardy).

The animal cell may be regarded as a semi-permeable membrane enclosing protoplasm. Unless both ions of a salt can enter a cell, neither does so (Cushny). The rate and degree of dissociation of different compounds are of great importance in their effects upon the cells of the body. The stronger acids and bases dissociate more readily than the weaker ones. Bivalent and trivalent ions resist dissociation and absorption much more than do the weaker ones. The organic compounds of arsenic (cacodylates) and bromine (monobromated camphor) dissociate with difficulty; hence they are less irritant and likewise less effective than the inorganic ones. Many non-electrolytes (urea, for example) permeate cells readily. Muscle immersed in equimolecular salt solution of Na or Li gains but little in weight; in K, gains a great deal; in Ca, loses water. Oils increase exosmosis, so there is a valid reason for greasing the nose and the chest for a cold. Glycerin is hygroscopic, and thus allays thirst and depletes inflamed tissues when applied on tampons.

Absorption.—Aqueous solutions are absorbed best from mucous membranes and subcutaneous tissues; oily or alcoholic (mix with sebum), by the skin-glands. The gums, sugars, starches, waxes and proteins of plant juices delay absorption of the active constituent. Hence laudanum or extract of nux vomica is prescribed when local action on the stomach or bowel is desired; morphine or strychnine for effects after absorption (Cushny). Acetate of lead with opium should be given in pill form, as otherwise it acts on the stomach. Nitrite of amyl by the mouth has but little effect, since the nitrous acid freed by the gastric juice is decomposed at once. It acts within a minute when inhaled. Shoemaker recommends absorption from the mouth by sucking tablet triturates, to get quick effects from aconite, belladonna or pilocarpine. Oleates of alkaloids and metallic oxides penetrate the skin more readily than solutions in fats and oils. Intramuscular injections of mercury are well given as calomel in liquid petrolatum (slow absorption—less painful). The addition of NaCl (10 parts) to $HgCl_2$ (one ion in common) lessens dissociation of the latter salt, and so renders it less germicidal but less irritant, hence more suitable for hypodermic injection in syphilis. Hypodermic medication is almost useless in marked dropsical conditions. So-called idiosyncrasies sometimes depend, no doubt, on abnormally rapid or retarded absorption or excretion. It is a general rule that medicines are to be taken after, rather than before meals (Hare), unless a local gastric effect or very rapid absorption is desired.

Acids.—Mineral acids owe their activities almost entirely to the hydrogen ion, which is stronger than potassium. Salicylic, benzoic and hydrocyanic acids have effect chiefly through their negative ions, the first two having a nearly identical action. Acids abstract water (astringent), neutralize bases and precipitate proteins, particularly globulins. They coagulate the superficial layer of proteids in the skin, mouth and throat, and so give rise to stiffness and numbness, or a puckery feeling. By reflex action they excite the flow of saliva (vinegar test in mumps) and other alkaline fluids, and so diminish febrile thirst (refrigerant). Acids are protoplasm poisons (antiseptic). When they are administered in large doses, animals die before their blood becomes even neutral (Cushny). Ammonia is liberated by the tissues for self-protection and to save the fixed alkalies from combining with the acids, mineral acids being excreted chiefly as ammonium salts. Organic acids are absorbed mostly as salts of the alkaline metals, and are oxidized to carbonates in the tissues, rendering the blood more alkaline and the urine less acid. Vegetable acids stimulate the alimentary secretions, causing flatulence and diarrhea. Benzoic acid, changed to hippuric acid in the kidneys, is the only drug that can effectually render the urine acid (White). Large doses of boric acid or of acid sodium phosphate are said to intensify urinary acidity, which is likewise augmented by the free use of carbonated waters (Ultzmann). Nitric acid by the mouth is said to increase the amount of ammonia in the urine, and thus render it slightly alkaline.

Bases.—Hydrates of the alkali metals owe nearly all their action to the relatively powerful anion hydroxyl. Carbonates and bicarbonates of these metals, by dissociation and combination with water (liberating HO), have properties similar to hydrates, though weaker. All these alkalies neutralize acids ($HO + O = H_2O$), dissolve proteins (including mucus) and saponify fat. They soften the skin and remove horny layers of epithelium. A dilute alkaline solution checks the discharge (same reaction) of acute eczema and allays the itching, smarting and burning (Shoemaker). Alkaline medication internally is of special use in arthritic dermatoses (Huchard).

Hydrates are probably absorbed as carbonates or in combination with proteins. Alkaline hydrates and carbonates render the blood and tissues more alkaline, aiding oxidation, but have less effect on tissue change than was formerly believed (Cushny). Through a saving of tissue antacid reaction, the ammonia of the urine is often decreased and the urea correspondingly increased. The local effect on the bowels may sometimes cause an increased formation and destruction of

leucocytes, and thus give rise to the appearance of more uric acid in the urine (Cushny). The organism quickly frees itself from excess of alkali by excretion of alkaline salts, with accompanying diuresis, so that the alkalinity of urine induced by sodium salts ceases on the day following their administration, and urinary acidity is then intensified (Bartholow). The alkalies in moderate doses are useful in irritable conditions of the bladder and urethra, but they are not lithontriptics (may cause a stone to fall apart by dissolving cementing mucus), and when given for some time in sufficient quantity to keep the urine alkaline are very liable to increase the size of a stone by secondary deposition of phosphates. Alkalies are of unquestioned benefit in late diabetes to neutralize oxybutyric acid and so economize the alkalies of the blood and fixed tissues. For producing effects after absorption, potassium bicarbonate is the alkali of choice, preferably administered on an empty stomach as an effervescing drink with lemonade. Ammonium hydrate has practically the same effect as ammonium carbonate, since the latter gives off ammonia freely. Owing to its volatility, ammonia is more penetrating than the fixed alkalies, but is less caustic. Alcohols are not dissociated in the body, as are the mineral hydroxides. Wood spirit is not so toxic as grain spirit, but is longer retained in the system; hence its deleterious effects on the optic nerve.

Salts.—The therapeutic effects of salts of the alkali metals depend chiefly on their relation to osmosis. Sodium chloride having a low molecular weight, and being readily dissociated, induces greater osmotic changes than most other salts. It penetrates the red blood cells with difficulty, if at all, and differs from most other binary salts in disturbing equilibrium toward the negative side (stimulating). Concentrated solutions act as counter-irritants (saline baths), while the imbibition of large amounts of a weak solution cause a mild stimulation of the gastric mucous membrane. Hypoisotonic solutions are absorbed rapidly, though not so quickly as water or alcohol; hyperisotonic solutions draw water from the blood (hydragog action) until they become isotonic, when the greater part remaining is absorbed. Salt is not necessary for the absorption of enemas (Cushny). The physiologic action of inorganic salts is an electric action, due to the changes in their ions (Mathews). Salt ions in the blood change the distribution of fluids in the tissues and exert besides a stimulating effect (diuresis) upon the kidneys. They "flush" the system by increasing the excretion osmotically of the diffusible constituents of cells (Sollmann). Slowly dissociated salts are comparatively free from local irritative effect. Ion action varies inversely as salt action. Osmotic nutritive changes produced by drugs are most pronounced in cells of the lowest vitality, hence salt action in general (iodides particularly) tends to break down pathologic formations (Sollmann).

Potassium salts are distinctly depressant to the heart and nervous system, whereas sodium has almost no effect; possibly the greater atomic weight of the former metal has to do with this difference. Lithium salts diminish the alkalinity of the blood (by reacting with Na_2HPO_4) and so lessen the elimination of uric acid. Ammonium salts are excreted as urea; hence (except the benzoate) they do not affect the reaction of the urine. The salts of strontium and calcium, being bivalent, are more slowly dissociated and absorbed than those of the alkali metals; they are less irritant locally and less effective in the blood than the latter. They are excreted chiefly through the large intestine; to a less extent by the kidneys (lime as calcium carbamate, which breaks up into the carbonate and ammonia, rendering the urine alkaline). Calcium salts lessen the phosphates in the urine (reducing its acidity) by forming insoluble phosphates in the bowel. The heavy metals have no chemical action on or in the body until changed by air to an oxide (mercury), or by secretions to chlorides, carbonates and other salts. These cations (and aluminum) combine with proteins (irritant or corrosive action), and are absorbed to a slight degree from the small intestine in such combinations and by the leucocytes. They are excreted mostly by the large bowel (causing irritation and ulceration) and to a less degree through the kidneys and in the secretions (mercury in the saliva). Double salts and organic compounds do not combine with proteins (non-irritating) until decomposed, as by acids. Inorganic iron may be more readily absorbed than food-iron enveloped in colloid matter (Cushny), aside from the much greater amount given as medicine. Hemoglobin (blood) is changed by the acid contents of the stomach to hematin ("coffee grounds"), which passes through the bowel unabsorbed (Cloetta). The soluble salts of mercury are more irritant and corrosive than those of other metals, since the protein ppt. is looser and so does not protect the deeper layers, and is further soluble in excess of proteins or in solutions of neutral salts. The chloride and nitrate (univalent anions) are particularly penetrating and corrosive. The least corrosive salts of mercury and other metals are those with the slowly dissociated organic acids. The albuminate of lead is soluble in potassium iodide, which is given to hasten the elimination of poisonous metals. Mercury is more quickly absorbed than other metals. Antimony enters the blood more slowly than arsenic, hence its effects are more localized. The effects of tartar emetic are due to antimony. It increases the sweat, saliva and bronchial mucus through reflex action in vomiting (Cushny). The colloidal salts of the metals have a distinct catalytic or oxidizing power. The halogen salts of the alkali metals owe their salty taste and medicinal properties chiefly to the negative element. Aside from their general salt action, they exert a selective influence on different tissues. Chlorine and bromine re-

place hydrogen in its combinations with proteids. All bromides are changed to NaBr in the stomach. They may cause considerable diminution of the urinary phosphates, by depressing mental activity. The various salts of the body are probably in definite ionic combination (not reacting to ordinary tests) with proteids, and it is possible to substitute one class of ions for another in the molecule, as when common salt in the food of epileptics is replaced with bromides and the body becomes saturated with bromine. The skin eruptions from bromides and other salts probably depend on the irritation accompanying their excretion through the cutaneous glands. Some iodides undergo decomposition—perhaps by interaction with nascent O and CO_2 (Binz)—and the free iodide thus formed is thought to cause the symptoms of iodism. Iodides in syphilis may act as a specific poison to the unknown cause of this disease. Arsenical preparations owe their therapeutic efficiency to the AsO_3 ion. The chlorate ion is a specific poison to hemoglobin. Whatever local usefulness chlorates may have is probably due, in part at least, to simple salt action (Cushny). The nitrate ion produces local irritation of mucous membrane. Sulphur is changed (by Na_2CO_3) in the bowel to H_2S and sulphides, which cause increased peristalsis, reduce oxyhemoglobin and depress the central nervous system. Sulphites and hyposulphites are absorbed and eliminated as sulphates, having a salt action only in the tissues. Hypophosphites are excreted unchanged in the urine, and there is no reason to suppose that they have any further action than other indifferent salts, such as chlorides of the same metals (Cushny). Citrates and acetates (and tartrates more slowly) are oxidized to carbonates in the tissues. They have the advantage over carbonates of not neutralizing the gastric juice. The ferrocyanids do not dissociate iron in the body.

Antiseptics, Anthelmintics, Parasiticides.—Solutions of antiseptics in oil have little or no antiseptic effect—may not diffuse into microbes. Equimolecular solutions of mercurial salts are bactericidal in the order of their capacity for dissociation of the metal, $HgCl_2$ ranking first. A solution of this salt in ether or absolute alcohol does not affect anthrax spores, since it does not dissociate. Mercury albuminate dissolved in sodium thiosulphate forms a complex, non-dissociable, non-antiseptic salt (Dreser). A trace of mercury is sufficient to kill a cell by combining with its protoplasm, and water distilled from copper vessels is also destructive to algæ and infusoria. The antiseptic effect of silver nitrate is limited by its reactions with chlorides and proteins. Owing to the absence of the astringent NO_3 ion, the colloidal salts of silver are less irritating than the nitrate. Permanganate solution oxidizes and destroys bacteria, but does not penetrate deeply. It is of special service as an antidote for snake-bite (Brunton) and in alkaloidal poisoning. Hydrogen dioxide is catalyzed by all forms of living (and dead) organic matter, liberating nascent oxygen. The deodorizing power of charcoal may be due partly to the absorbed oxygen. Sodium sulphite gives off the strong reducing agent, sulphur dioxide gas, in the stomach. Phenol and the aromatic acids are general protoplasm poisons, producing gangrene at times. The lower members of the aromatic series are generally more poisonous to higher animals than the more complex ones, while the latter are equally or more efficient in the destruction of the lowest living forms (Cushny). Formaldehyde renders proteins insoluble. Quinine and aromatic acids prevent the movements of protozoa and leucocytes. Acids are generally antiseptic (protoplasm poisons), hydrochloric being the most efficient for internal use. In the normal strength of gastric juice it destroys the great majority of the less resistant micro-organisms. Salol is dissolved and rendered active by the steapsin of the pancreatic juice. It has but little effect on the amount of indican in the urine (Kumagawa). Calomel, strontium salicylate (Wood) and the sulphocarbolates are among the best intestinal antiseptics, and all purgatives have an antiseptic effect by removing the culture media on which the bacteria flourish. Yeasts and microbes are precipitated by tannin (antifermentative). The use of creosote, guaiacol, etc., by the mouth for pulmonary disease gives favorable results in some cases by their disinfectant action on the stomach and bowels. The traces of volatile oils excreted by the lungs are quite incapable of any noticeable effect on microbial growth (Cushny). The inhalation of turpentine or terebene sprayed into the air lessens the foul odor of pulmonary tuberculosis or gangrene.

Volatile oils are closely related to phenols and aromatic acids. They are all antiseptic and some are germicidal, readily penetrating protoplasm and lessening its vitality by acting as foreign bodies (Cushny). They are of special service (particularly terebene) as stimulating antiseptics in the subacute and chronic stages of inflammation of the urethra or bladder. Santal oil, balsam of copaiba and oleoresin of cubeb are common examples. The benzol derivatives are excreted by the kidneys in forms much less irritant and antiseptic than that in which they are administered (Cushny). Hexamethylenetetramin passes into the urine unchanged or as formaldehyde. Its value as a genito-urinary antiseptic has been somewhat overrated. Chloroform, one minim to the ounce, is the best preservative of urine or of solutions of alkaloidal salts.

Most so-called antiseptic dressing powders act in the main merely as drying and protecting agents, although those containing iodine liberate this element slowly in the presence of moisture. Boric acid is no disinfectant, but is a useful antiseptic dusting powder in the impalpable form. Baking soda is an excellent application to moderate burns and slight wounds. Pyrogallol is

said to owe its value in skin diseases to its reducing action, depriving the superficial tissues of oxygen. Balsam of Peru has largely taken the place of sulphur (SO_2) in the treatment of scabies. Ozone is antiseptic only when the air contains 13.5 mg. or more per liter, which is never attained in practice (Cushny). Pelletierine comes nearest to being a specific anthelmintic. A dilution of 1:10,000 kills tapeworms in ten minutes (Schröder), while a strong solution has practically no effect on other worms. The therapeutic action of male fern is due to the neutral bodies aspidin and aspidinin and to filicic acid. Oily substances should be avoided in conjunction with male fern, since they dissolve the filicic acid and promote its absorption, causing toxic symptoms (Poulsson). The bowels should be well cleared out with oil some hours before. Santonin (with calomel), spigelia and chenopodium are effective vermifuges against the round worm; and repeated injections of brine (dissolves mucus) or infusion of quassia will rid the rectum of thread-worms. Certain drugs may set up in the human body a reaction destructive to parasites, the dead parasites inducing the formation of immune bodies, as in the use of trypan red by Ehrlich and Shiga in cases of trypanosomiasis.

Protectives.—Emollients, to the skin, and demulcents applied to its involution, the mucous membrane, afford much relief locally and have also a reflex action. Inert oils and fine, insoluble powders (rice, starch, talc, fuller's earth, lycopodium) are used to protect an abraded surface from the air and other irritants, and to soak up secretions. Flexible collodion is a useful application for skin-cracks. Petrolatum is the usual basis for ointments, and is preferred to lard, since it does not become rancid. Liquid petrolatum, instilled into the nostrils, after cleansing with a physiological salt solution, frequently checks the night coughs of children. When glycerin is used as a protective, it should be diluted (4 parts water) to the sp. gr. of blood serum.

Demulcents consist largely of colloid and mucilaginous substances. They are slowly absorbed, and so may decompose and irritate the alimentary tract. They increase secretion, particularly when used as lozenges. Licorice is an excellent demulcent for sore throat and tickling cough. Sassafras is a mucilaginous demulcent. Bismuth salts are about the best gastric sedatives in sufficient doses (up to ½ ounce daily), soon becoming evenly distributed over the whole inner surface of the stomach. They also allay intestinal irritation with diarrhea, and serve to prevent autointoxication (hydrothionemia) by combining with the hydrogen sulphide of intestinal putrefaction (Fuller). The undoubted good effect of olive oil in some cases of biliary colic is due probably to its demulcent action on the duodenum, with consequent lessening of gall-duct irritation. Demulcent mixtures (starch, slippery elm) are of service as soothing enemas, and do not provoke peristalsis as crystalloids would. Demulcents have a local effect only, giving "body," and agreeable taste to a draught and assuaging thirst. Triticum (a starch and sugars) increases the quantity of urine simply by the water given with it (Cushny).

Counter-Irritants and Stimulants.—It has been shown by experiments on animals that when the vessels of the skin are dilated by the application of an irritant, those of the subjacent viscera are often reflexly contracted (White). If one hand is placed in cold water, a positive fall of temperature takes place in the other. The irritation of a surface involving the end-organs of the nervous system modifies the functions of the trophic nerves (Bartholow). There is a definite reflex relation between the internal organs and that part of the skin supplied by the same nervous segment (Head). The improvement of circulation produced by slight irritation may also be of benefit in chronic inflammatory conditions in the subcutaneous tissues (Cushny). Counter-irritation applied to a considerable surface increases the action of the heart, raises body temperature, and exalts the irritability of the nervous system.

The active principle of counter-irritants and stimulants is generally a volatile substance; hence, penetrating. Ethereal oils with low boiling points and comparatively little oxygen are very penetrating; thus, turpentine is more penetrating than mustard or cantharides. The sulphur-containing volatile oil of mustard is produced from a glucosid (sinigrin or sinalbin) by the action of a ferment (myrosin) in the presence of moisture. This ferment is destroyed by heating above 60° C., hence boiling water should not be used in making mustard plasters.

Alcohol is a local irritant and, properly diluted, may quicken the healing of sluggish sores. Tincture of arnica and the distilled extract of hamamelis owe what good effects they may have simply to the contained alcohol. Ammonia is quite penetrating but is not so corrosive as the fixed alkalies, since its action is of short duration. Most liniments are composed of volatile oils or stearoptenes, alcohol and ammonia. Iodine excites a mild but steady cutaneous irritation, and induces some congestion in the underlying tissues, thus aiding the absorption of exudates in them (Cushny). It destroys epithelium and causes it to peel off. Sulphur produces mild and prolonged irritation, since it acts only as gradually converted into sulphides. The much-vaunted ichthyol is a weak counter-irritant, depending for its action on the contained sulphur. Cantharidin vesication is less painful than when produced by mustard or turpentine, because the Spanish-fly is non-volatile and therefore less penetrating. Pustulants (croton oil) act as severe irritants in contact with living tissues, as at the orifices of the cutaneous glands (Cushny). The double salt, tartar emetic, is perhaps broken

up and made active by the acid in the decomposing secretions of the skin. Carbon dioxide has a weak irritant effect; hence its use in baths and as carbonated drinks (increase stomach blood-flow and appetite).

Ammonia and ether are very powerful stimulants to the cardiac and respiratory centers, whether taken by the mouth or inhaled. The aromatic spirit of ammonia is one of the best all around cardiac stimulants for tiding a patient over a short period of danger. Volatile oils and their essences stimulate the heart reflexly, in addition to their local carminative influence. The virtue of asafetida is in its volatile oil. The nitro-compounds owe their vasodilator activity to the NO_2 ion. The nitrites of sodium and potassium act more slowly than the very volatile amyl nitrite (by inhalation), but their effects are more durable (four to six hours). Nitroglycerin is absorbed unchanged, and is broken up by the alkaline ingredients of the blood into a mixture of glycerin, nitrites and nitrates; the last named salts in the small quantity given have practically no action (Cushny). Strychnine greatly increases muscular activity (may cause fever) and exalts spinal irritability (reflex tone). Caffeine stimulates the cerebrum directly. Atropine enhances the motor power of the heart and diminishes inhibitory control. Small doses of quinine have a vasoconstrictor; large doses, a vasodilator action (Butler).

Caustics, Astringents, Styptics.—A caustic action indicates affinity for water and for the proteins in the secretions and tissues. Astringents coagulate the semifluid cement substance of the endothelial cells, and so prevent filtration of fluids and emigration of cells (Sollmann). Caustic alkalies are deeper in their action than the mineral acids, which tend to form a hard, insoluble, self-limiting eschar. Lunar caustic owes its escharotic action to the nitrate ion, metallic silver being deposited in the epithelium. Dilute solutions of caustic serve as astringents, contracting vessels and diminishing exudation and secretion.

The sulphates of aluminum and the heavy metals act as caustics and astringents—metasulphuric acid has a great avidity for water. Burnt alum is a good local application to granulations and condylomata. The sulphocarbolate of zinc is an effective antiseptic astringent. Zinc chloride and chromic oxide are very hygroscopic and equally caustic. Arsenous oxide is said to destroy diseased surfaces, leaving the healthy skin unaffected. Lead preparations are usually astringent, but rarely the irritant properties of the metal may set up diarrhea. Hydrochloric acid is of considerable value in fermentive diarrhea, the double sulphates of the urine diminishing under its use. The oxide and carbonate of zinc are much used for their astringent effect in acute skin diseases. Dilute acids applied to the skin are antihydrotic. Sweating feet are well treated by sponging with formalin (hardens epithelium) or a 1:20 solution of chromic oxide. The astringent action of lime water is probably due to the formation of insoluble compounds with surface proteids (Cushny). Carbonate of calcium (chalk mixture or aromatic powder) is a useful antacid astringent in hyperacidity with diarrhea.

Vegetable astringents owe their properties as such chiefly to some form of tannin, which precipitates proteins (not peptones in an acid medium) as digestible tannates. For intestinal effect it is better to give the colloid U. S. P. preparations (kino, catechu, krameria, hamamelis), or, still better, insoluble combinations with proteins (digested by pancreatic juice), so as to avoid the local action on the stomach. These render the stools harder and firmer, and check diarrhea. An excess, by irritating the bowels, may lead to loose stools. Tannic and gallic acids given by the mouth are absorbed to a slight extent as tannate or gallate of sodium, which has no astringent effect; hence these remedies are useless for remote hemorrhages (Cushny).

Locally applied, tannin stops bleeding by coagulating the proteins of the blood, but only when brought into immediate contact with the bleeding point. Gallic acid and tannates do not coagulate albumin. Ergot acts directly (tetanic contraction) on the blood-vessels and unstriped muscle tissue. The convulsive alkaloid cornutine is the chief factor in the action of ergot on the uterus (Kobert). Gangrene may be brought about by the prolonged contraction of the arterioles, leading to a hyaline formation (by sphacelotoxin) in the lumen and walls (Cushny). Hydrastine is also a vasoconstrictor of the peripheral vessels, and is useful in menorrhagia. Acetanilid and antipyrin act on the muscular coat of small vessels as powerfully as ergot (White). The suprarenal derivatives have a marked vasoconstrictor and styptic effect when locally applied (nose, stomach, bowels), and have been much employed for internal hemorrhages, though with somewhat indefinite result. Turpentine contracts the arterioles, and is an effective hemostatic. Opiates (except codeine) lessen the secretions and diminish normal peristalsis. The salts of lead and iron are of no value in visceral bleeding, since they are absorbed only in minute quantities and in a non-astringent form. Ferric chloride is perhaps the best of the mineral styptics in capillary and recurrent hemorrhages (Cushny). It precipitates the proteins of the plasma, and so stops the flow when brought into actual contact (styptic cotton) with the bleeding point, as in the nose or gums. It may cause a fatal embolus when injected into the uterus, a nevus or an aneurism.

Eliminants.—Intestinal evacuants act by increasing osmotic pressure (hydragogues) and by exciting peristalsis. They should not be absorbed from the stomach, and those that act chemically are generally insoluble. The colloid character of impure sugars (honey, molasses,

manna) causes delay of absorption and softer evacuations. Constipation is due chiefly to a sluggish colon, and most purgatives act principally on this portion of the intestine; calomel affects the small intestine particularly, and so is properly followed by salts (affect large bowel). Purgative salts have a greater tendency to precipitate proteins and less tendency to permeate into unorganized colloids than most non-purgative salts (Hofmeister). Very dilute solutions act as diuretics, but more slowly than non-laxative salts. The greater the purgative the less the diuretic effect. The stool is softer after purgation, from increased secretion and unabsorbed water. If the muscular coat is affected there is griping, which may be prevented to some degree by combining with carminatives or an alkali.

Sulphates, phosphates, tartrates and citrates are less readily absorbed than the univalent salts of the same metals (Cushny); hence they exert osmotic pressure in the bowel. Magnesium, being bivalent, is more slowly absorbed than univalent sodium. $MgSO_4$ is more purgative than Na_2SO_4, since in the former both ions are difficult of absorption. The sodium salt (c. p.) is, however, generally preferable (Wetherill); in fact $MgSO_4$ is largely changed to the acid carbonate and Na_2SO_4 in the bowel. The fluid, drawn by osmosis chiefly from the blood-vessels, by its weight, and the distention of the large bowel, causes increased peristalsis and evacuations that are much more prompt than those from vegetable purgatives, most of the salt appearing in the feces. The more concentrated the solution of salts administered and the more fluid in the tissues, the more profuse the evacuations will be. The oxide and carbonate of magnesium are insoluble (may form concretions) and alkaline (counteract acidity). Calcium salts would probably be aperient were they not so readily precipitated. A small amount of $CaCl_2$ added to a saline enema prevents its premature expulsion (MacCallum).

None of the so-called cholagogues have any appreciable effect on the secretion of bile (calomel decreases it; bile salts augment it), but any of them may increase its excretion by hurrying it through the bowel. Calomel preserves the bile (and food) from putrefaction, and so gives a green color to the stool. It relieves "biliousness" due to disorders of the alimentary tract. Bile acids (fel bovis) irritate the mucous membrane of the large bowel and so induce purgation (Stadelmann). There is no condition known in which increase of biliary secretion is indicated, since when the pressure is augmented in the gall-duct the secretion is automatically arrested (Cushny).

Vegetable purgatives serve as local irritants to the muscular layer of the bowel, especially in the presence of bile, which aids in their solution or suspension, thus bringing them into intimate contact with the mucous membrane. Soaps have a similar adjuvant action (Stadelmann). Many of these purgatives act specifically on the bowel (perhaps by excretion here) when injected subcutaneously (croton oil enepidermically). Cascara, frangula, senna, aloes and rhubarb owe their activity to anthracene or anthraquinone bodies, which are commonly attached to a sugar molecule, forming a glucoside (Cushny). Some of these principles are much less active than the crude drugs, since impurities may alter solubility; thus, aloin is less certain than aloes. On account of their taste, vegetable purgatives are usually prescribed in pill or tablet form. Rhubarb contains considerable tannin, and its use is often followed by constipation. The bitter stomachic by-action is in its favor. Aloin acts largely on the lower bowel and may cause piles. Its purgative effect is increased by the addition of a little iron and alkaline salts (Cushny). The cathartic acid of senna and cascara stimulates the colon especially. Convolvulin (jalap), jalapin (scammony), elaterin, bryonin, leptandrin, euonymin and the active principles of podophyllum are irritant resinous glucosides (anhydrids). Colchicum, guaiac, sanguinaria, xanthoxylum and stillingia owe their medicinal value mainly to their selective eliminant action on the mucous membrane of the intestine. Caffeine increases secretions, and so is slightly laxative.

Castor oil on saponification by pancreatic steapsin, yields irritant ricinoleic acid, which differs from the free acids of ordinary fixed oils in being unsaturated and containing an OH group. Croton oil is likewise changed to glycerin, and the very irritant crotonoleic acid; there is some free acid (much in old specimens) in the oil. The irritant effect of glycerin injected into the rectum causes prompt evacuation. Bile is no more effective than soap in enemas.

Diuresis by means of drugs depends on vasodilation (alcohol, nitrites), increase of arterial blood-pressure (digitalis), and direct stimulation of renal cells (salts of univalent metals). Salines are diuretic, since they accumulate fluid in the blood (capillary engorgement) at the expense of the tissues. Potassium salts are more diuretic than those of sodium, as the former react with other salts, producing an excess in the blood of certain salines, which are quickly excreted by the kidneys. When sweet spirit of niter is prescribed with water, the ethyl nitrite rapidly escapes, and the effect is merely that of alcohol and ether. Calomel is an effective diuretic in cardiac dropsy, probably by a direct action on the renal epithelium. Theobromine is preferable to caffeine as a diuretic, since the first alkaloid has no vasoconstrictor action (Cushny). Uva ursi is slightly antiseptic (arbutin and methyl-arbutin), and buchu also (volatile oil.) Zea maize owes its diuretic effect to a resinous acid.

Volatile oils are excreted chiefly by the lungs and kidneys, and are used as stimulating expectorants (terpene, terebene, balsams, squill). Alkalies also increase the secretions in bronchitis and render them more fluid. Pilocarpine acts on

the nerve-endings in the gland cells; it augments the proportion of urea in the sweat. Emetics act locally (emetine, antimony) and centrally (apomorphine). In the latter event they are best given hypodermically.

Digestants.—Hydrochloric acid is of the greatest value in conditions accompanied by hypo- or achlorhydria, being requisite to the action of pepsinogen, a stimulant of pancreatic secretion and an effective antiseptic. It should be given in full doses—10 drops of the strong acid just after eating, to be repeated in one-half hour and again in an hour if need be, always well diluted (Hershey). This quantity at the most is about half what nature should furnish. As an aid to peptic action HCl is exceeded only by HF and $H_2C_2O_4$, both poisonous. Alkalies give quick relief in hyperchlorhydria, and render mucus less tenacious. Alkaline salts have no action on the bile, but may be of benefit in hepatic diseases through their sedative effect on the duodenum (Stadelmann). Milk treated with lime water curdles in finer flakes and so is more easily digested.

Pepsin is not needed in the great majority of cases of dyspepsia, since the zymogen is present in quantity even when the acid secretion is insufficient. Moreover, as Cushny remarks, the doses usually given are amusingly small (nature furnishes about three ounces daily). Practical uses for the essence of pepsin are the preparation of junket and whey, and coadministration with iodides and salicylates to prevent irritation of the stomach. Pancreatic ferments are destroyed by the acid gastric juice (in about ½ hour after food is taken), hence if diastatic mixtures are thought to be needed they should be given at the beginning of a meal or three or four hours later. It is a question whether the ordinary digestive juices are ever unable to digest the starch of food (Cushny). "Amylaceous dyspepsia" is usually a fermentive condition due to lack of HCl.

All bitter (taraxacum, quassia, calumba, hydrastis) and aromatic substances given by the mouth, reflexly increase the flow of saliva and gastric juice, and excite the appetite psychically. Nux vomica or strychnine is also a direct stimulant to the muscular coat of the stomach, rarely producing painful spasm of this organ. Bitters are best administered shortly before meals. They are of value in convalescence and sedentary habits and occasionally in chronic dyspeptic conditions (Cushny). Their long-continued use produces gastric catarrh, decrease of normal gastric juice and impaired digestion (Bartholow).

Carminatives (chiefly volatile oils) cause a sensation of warmth and comfort in the stomach and a marked increase in the gastric juice (by reflex from the mouth and nose). They accelerate the movements of the stomach, promote absorption and relieve flatulence and distention (Cushny). They are most useful in sedentary subjects with no marked gastro-intestinal irritation. Their effects in the large bowel are best obtained by giving full doses (of asafetida and turpentine, for example) in enemas of hot water and soap. For administration by the mouth cardamom is both pleasant and effective. Capsicum is much used for the dyspepsia of drunkards. Aromatic ammonia is a mild gastric stimulant in debility and alcoholism. It appears to act reflexly as a general stimulant in collapse or heart failure (Cushny). The action of viburnum and other uterine sedatives is probably of a similar nature to that of peppermint and ginger. The volatile oil in myrrh renders it a healing agent for sore gums. Spirits are all carminative and stimulant.

Restoratives.—Among nutrient medicines cod-liver oil ranks first. It is in fact little else than an easily emulsified fat, and is especially valuable to increase weight in delicate children. It is perhaps more readily oxidized in the body than other oils (Heyerdahl). Eructations result when the free acids contained in the oil are air-changed to oxyacids. The traces of halogens and alkaloids contained in the oil, and supposed to be present in wines of cod-liver oil, can hardly have any medicinal effect. Phosphorus exists in the elemental state in the blood, and its effects on the tissues are unquestionably due to the element itself and to none of its compounds (Cushny). It has a specific stimulating action on the formation of bone from cartilage, being much more effective in rickets when given in cod-liver oil (Rey). An excess causes deficient oxidation and fatty degeneration. Phosphoric acid and its salts have never been shown to be of any benefit in any cachectic conditions. Calcium salts are not likely to be of service in human rickets, since in these cases there is plenty of calcium phosphate in the blood, but the bones cannot take it up. Calcium chloride is claimed to be of service in hemophilia; its presence is necessary to the formation of fibrin ferment. Bitter tonics stimulate the production of appetite juice through psychic contrast (Pawlow). They have little or no effect in this direction when introduced directly into the stomach. Tonics favor decomposition of waste products and stimulate tissue formation by catalysis (Benedikt).

Arsenic increases appetite and promotes digestion, growth and nutrition, perhaps by selective action on epithelium (Cushny). It seems to act only on living cells. It is beneficial in many forms of chronic skin diseases (deleterious in acute stages), and temporarily in pernicious anemia. Cumulative excess lessens oxidation (H_3AsO_3 takes O from living cells) and causes fatty degeneration of the viscera. According to Bertrand, arsenic is a fundamental constituent of the human body. Iron is the hematinic par excellence, particularly in chlorosis, and is best given probably in some organic combination. The anemia of plethora requires agents to overcome suboxidation, rather than hematinics (Shoemaker). Very small doses of mercury, given for

some time, increase weight, nutrition and the number and quality of the blood cells (Cushny) by stimulating metabolism (alterative). Gold is of no value in therapeutics, except possibly by suggestion. Quinine differs from most other alkaloids in acting on the general nutrition of protoplasm. It lessens the number of leucocytes, which may be one factor in reducing the size of the spleen (Cushny). It lessens the destruction of nitrogenous bodies and the formation of uric acid, thus sometimes relieving non-malarial headache and neuralgia. Sarsaparilla is not a blood-builder, but the reverse. Owing to its saponin-content, it induces hemolysis (Kobert) if absorbed.

The members of the digitalis series consist of glucosides or indifferent compounds of C, H and O, probably with a common nucleus belonging to the picrotoxine series (Cushny). The active principle of the adrenals (adrenalin, epinephrin) contains a pyridin nucleus. It raises the blood pressure more than any other remedy, partly by direct action on the arteriolar muscular coats, partly by enhanced cardiac contraction of vasomotor origin. Thyroid extract causes rapid loss of weight (I have noted 11 pounds loss in a month), with increase of urinary nitrogen and phosphates, in goiter, cretinism, myxedema and soft anemic obesity. This reduction is due to augmented waste of body proteids, rapid oxidation of fats, and diuresis. Part of the constituent iodine of the extract is taken up by the patient's thyroid, and part is excreted in the urine as iodides. Much more iodine is required to act in goiter when taken as the element than when ingested as thyroid extract or iodothyrin (Cushny). Thyroid extract is injurious in Graves's disease, which thymus extract is said to relieve sometimes.

Hypnotics, Antipyretics, Anodynes, Analgesics, Anesthetics.—The narcotic effect of certain drugs may depend on a reducing action, drawing oxygen out of the biogen molecules of the nerve centers. The solvent power on the fats (of neurones) of the methane derivatives may also have something to do with their general anesthetic effect. Hypnotics probably induce changes in the brain similar to those of natural sleep. Chloral does not break up into chloroform in the blood, as Liebreich thought, but is excreted in the urine in combination with glycuronic acid (urochloralic acid). Its continued use leads to imperfect oxidation (fatty degeneration) and augmented destruction of body proteids. Sulphonal and trional are almost insoluble in water, hence their action is slow and uncertain, though comparatively safe. Sulphonal is excreted as ethyl-sulphonic acid, but the narcosis produced is due to the unchanged molecule (Cushny). The resinous red oil (cannabinol) of cannabis indica seems to be the active principle. Morphine is excreted mainly by the digestive tract, only traces being found in the urine; therefore it is not contraindicated in uremic convulsions. The benefit derived from valerian in hysteric affections is probably due to the strong mental impression produced by its odor and taste. Valerianates act only as do the salts of other organic acids.

Chemical antithermics act by diminishing exalted cellular protoplasmic activity, by modifying the function of the red blood cells and by a direct sedative action on the nervous system. Antipyrin is useful in lingering pyrexia after infection is ended, to control excessive oxidation by reducing metabolism to the needs of the economy (Roger). Except antipyrin, all modern antipyretics (phenetidine compounds) owe their activity to the formation of simple derivatives of paramidophenol in the tissues. This decomposition should be gradual, for if too rapid there result collapse and destructive blood changes (methemoglobinemia, cyanosis). The cyanosis is due to vasoconstriction and consequent engorgement of capillaries and slowing of the current therein, whereby oxyhemoglobin is unduly reduced (Sajous). Acetanilid in large doses increases tissue waste about one-third. Antipyretics affect chiefly the thermotactic nervous mechanism, thus lowering the point (as in a thermostat) at which the temperature is maintained (Cushny). They cause dilation of the cutaneous vessels, with sweating and increased thermolysis. True thermolytic drugs (alcohol, spirit of nitrous ether, ipecac, antimony) were more used formerly than at present. Sudorifics (pilocarpine, salicylates) lower febrile temperature by increased dissipation of heat. Purgatives sometimes act as febrifuges by removal of reflex irritation and of sources of intoxication. Quinine retards metabolism. Aconite, pulsatilla, gelsemium, grindelia and quebracho are motor depressants. All antipyretic phenetidine compounds have likewise an anodyne effect.

Cocaine is a general protoplasm poison (causes scars aside from infection), with some selective affinity for certain nerve-endings, and it causes transient local contraction of the blood-vessels. Its anesthesiophore function is due to the benzoyl group. Cocaine and HCN check vomiting by their local anesthetic effect. Menthol makes the skin or mucous membrane warmer by several degrees, but imparts a sensation of cold, since it affects the psychrophoric dendrites most. Aconite is distinctly analgesic. Volatile oils (cloves) relieve the pain of an aching tooth by paralyzing the exposed nerve-ends after preliminary irritation (Cushny). Guaiacol is a powerful analgesic and antipyretic. A fine spray of any volatile substance (ether, ethyl chloride) produces cold by rapid evaporation, and so benumbs the skin. Except nitrous oxide, all anesthetics belong to the alcohols or simple or haloid ethers. When a subject has acquired a tolerance for alcohol, he requires a larger quantity of hypnotics or anesthetics. Ether and chloroform are absorbed and excreted almost wholly by the lungs, according to the ordinary physic laws of absorption of gases by fluids (Cushny). The greater

the concentration of vapor in the lungs, the more is absorbed into the blood, and overconcentration at any time, rather than the total amount inhaled, may give rise to dangerous symptoms. Chloroform enters into a loose combination with the lecithin of the red cells and the brain, causing slight coagulation of the protoplasm of the ganglion cells; Pohl has found much more chloroform in the brain than the liver. Nitrous oxide, when inhaled, behaves as a molecular depressant (like chloroform or ether) to the central nervous system. In relation to the blood it behaves as an indifferent gas (like H or N), causing asphyxia, since it is not a supporter of combustion at body temperature.

SOME RECENT DEVELOPMENTS IN CLINICAL PATHOLOGY.[1]

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THE chemical and microscopical examinations made as an aid in diagnosis and prognosis are matters which have been receiving a large share of attention during the last few years, as shown by the many recent publications on the subject. The *refinements* of this work require a rather expert knowledge of chemistry and of chemical laboratory technic, somewhat beyond that usually acquired in the medical school even at present, and a more elaborate working outfit than the clinician has been in the habit of maintaining. An added difficulty is the amount of time required by this work, and interruptions are likely to jeopardize the accuracy and consequently the utility of the investigation. As a result of this, much of the work has been done by beginning practitioners often insufficiently equipped with knowledge and apparatus, and by chemists without clinical knowledge and consequently not able to appreciate the direction in which to pursue an investigation, a direction apparent to the clinician by developments early in the examination. Publications on the subject are oftentimes faulty from the physician's point of view; either the technic has not been described with sufficient minuteness to tempt the practitioner to make the investigations, or the article has been burdened with graphic formulæ and technical description without a clear statement as to the absolute clinical value of the procedure.

Most men appreciate that clinical pathology is a factor of more or less value as the case may be, in diagnosis and prognosis, but as in all other questions there are extremists. It is reasonable to claim that the practitioner who makes every diagnosis in the laboratory is as short-sighted and liable to grave error as the man who ignores microscope and test tube. The laboratory finding should be considered one of the supports in diagnosis and only in exceptional instances the diagnosis itself.

[1] Read at the Annual Meeting of the New York County Medical Society, Oct. 24, 1904.

While it is impossible to review in the few minutes at my disposal all the advances made since the subject has had more careful attention, I hope you will allow me to allude briefly to a number of points which are, or promise to be, of undoubted clinical merit.

The aids given by careful blood examination in the differential diagnosis of chlorosis, secondary anemia and pernicious anemia are well understood, generally appreciated and need no further comment. The present methods of determining the amount of coloring matter in blood are crude and need replacement by more scientific determinations of the actual amounts of hemoglobin and iron. Detailed examination of leucocytes and the differential count of the same in cases of acute and chronic leucemia lead to general dissatisfaction with the present clinical classification, which is as much in need of revision as was that of Bright's disease twenty years ago. Since blood examinations have become a routine matter, the details of many cases of acute lymphatic leucemia have been published; cases where death would probably have been ascribed to other diseases had the examinations not been made. In recent literature one also finds careful records which would seem to indicate an acute myeloid leucemia, a hitherto undescribed disease.

Concerning the Widal clump reaction in typhoid, prolonged use demonstrates that positive reactions are rare before the fifth day in bed. This makes the test of less diagnostic value early in the disease than we had hoped at first.

A method for the use of sterile suspensions of typhoid bacilli instead of fresh live cultures has been revived. Widal reactions in non-typhoid cases are often due to inaccurate rather than to deliberately insufficient dilutions, and to the use of improper cultures. On a recent visit to some military and civil hospitals in Japan, I was pleased to find the dilutions made in accurate blood pipettes with carefully prepared bouillon cultures, and not as one sometimes observes at home, with dried drops of blood of unknown size, an old agar typhoid culture and water, the dilution judged by the color of the resulting mixture. It is not my object to condemn the use of dried blood for the Widal test, but if it is used, my experience teaches that a bouillon culture and a careful attempt at volumetric dilution are far better than a mechanical mixture of bacilli and a colorimetric dilution. The administration or urotropin has been known to give a Widal reaction in the usual dilutions.

In suspected malaria it is well to remember when searching for *Plasmodia*, that the characteristic evidences of a decided secondary anemia and an increase in the relative percentage of large lymphocytes, are corroborative factors.

Blood changes as an indication of inflammatory lesions have recently been the subject of much discussion and promise a valuable aid in diagnosis. The presence and degree of leucocytosis

is the feature on which most conclusions are based, and present day literature is still largely occupied with this problem. Many monographs have appeared in which the authors attempt to fix the degree of leucocytosis at which an inflammatory lesion without exudate may be suspected and that at which a suspicion of the presence of a purulent exudate is justified. Leucocytosis is, however, largely dependent on body resistance toward infection; thus good resistance will occasion pronounced leucocytosis in slight infections, and poor resistance little or no leucocytosis in grave infections. As there is no method of determining this body resistance with sufficient accuracy, the inference drawn from a leucocytosis of given degree must remain questionable except perhaps in unusually excessive counts.

For the past few years I have been impressed by the fact that the differential count of leucocytes offers a far better guide as to the status of the inflammatory process, one which is not influenced to a perceptible degree by body resistance, and furthermore, that the leucocytosis with a given differential count may be an indicator of this body resistance. I cannot here enter into the details of this subject, but I hope to lay the matter before you with the necessary clinical and laboratory data at an early date.

Cytodiagnosis in cerebrospinal, pleuritic and peritoneal transudates and exudates has been the subject of extended research, and some advances of practical value have been made. In the differential diagnosis of exudate and transudate, the older chemical methods are still very much in use.

Careful urine analysis and attention to the evidences of faulty metabolism are important in the differential diagnosis of nephritic eclampsia and that due to puerperal toxemia, and of neurosis and definite gastro-intestinal lesions, and present distinct therapeutic indications in the diseases classed under the headings of rheumatism and gout.

In the different varieties of nephritis the urine offers much information of clinical value in addition to albumin and casts. While extensive records tempt me to resent Cabot's statement in a former lecture at the New York Academy of Medicine, that the knowledge of the daily excretion of urea is useless, still it is time that the quotations of "grains per ounce" disappeared from our hospital charts.

In diabetes the urine also presents facts which give a much better insight to the patient's actual condition than the mere knowledge of the percentage of sugar.

Examination of specimens of urine obtained by ureter-catheter, cryoscopy of blood and urine, and the phloridzin, methylene blue and indigocarmine methods of estimating renal functional ability are of much value to the surgeon, give clearer indications and contra-indications in contemplated renal surgery and have thus contributed to improved statistics.

MEDICAL PROGRESS.

SURGERY.

Congenital Absence of the Tibia.—This subject is interesting principally from the standpoint of its eliology, which may be considered as still unsettled. The condition is viewed from a new point of view by J. K. YOUNG (*Univ. Penn. Med. Bull.*, November, 1904), who reports four cases which have been under his observation, making a total of 51 thus far known. The theories as to the cause for the deformity may be summarized as follows: Heredity, prenatal disease, or musculonervous theory; arrest of development, or osseous theory; mechanical pressure, or intra-uterine pressure theory; and amniotic adhesion theory. The author is inclined to the latter theory and believes that the amniotitis, which is the cause of the amniotic adhesions, is a traumatism occurring in the early months of fetal life. Five cases are known in which the effect of injury upon the loss of parts could be traced. The fact that the tibia suffers more frequently than other parts is due to two factors—first, the position of the fetus is such that the pressure upon the abdomen would force the lower extremities against the sacrum and produce an injury to the amnion directly overlying the tibia, and second, the centers of ossification of the tibia are deposited very early,—during the seventh week, which accounts for the loss of the shaft of the lower extremity. After the attachment of the part to the amnion, the inflammation present produces an acute polyhydramnios which, making traction upon the attached portion of the amnion, pulls the skin and the underlying structures from their places, separating them from their vascular and nervous connections, or by the formation of amniotic bands, cutting them off entirely and producing their absorption. The author's cases lead him to think that a sudden and violent pressure upon the uterus which would be sufficient to cause inflammation of the soft parts, but not of sufficient force to injure or fracture the bones, would lead to an amniotitis, followed by a hydramnios which would produce the exact conditions which are found in these deformities. The traumatism probably occurs about the third month of fetal life.

A Case of Thymus Death from Local Anesthesia.—This took place in a woman, aged thirty-one years, who presented a goiter of moderate size, the removal of which was undertaken by the aid of Schleich's method of infiltration anesthesia. H. NETTEL (*Archiv f. klin. Chir.*, Vol. 73, No. 3) who reports the case, states that the patient suddenly lost consciousness, went into rapid collapse and died apparently with paralysis of pulse and respiration. The autopsy showed the presence of the status lymphaticus with enormous hyperplasia of the entire lymphatic apparatus, especially the lymph follicles in the tongue, spleen and intestines. The author thinks that the immediate cause of death was the operative procedure combined with the mental excitement of the patient. This is similar to the sudden death which individuals afflicted in this manner often meet by being subjected to comparatively trivial irritants, such as taking a bath. Nettel thinks that the best method of anesthesia in these cases is by means of ether given in the smallest possible amount and for the briefest possible period.

Sarcoma and Carcinoma in the Same Individual.—An instance of this kind is described by H. HABERER (*Archiv f. klin. Chir.*, Vol. 73, No. 3), in a man, fifty-four years of age, who presented a rounded growth on the border of the epiglottis. It was shaped like

a mushroom and was readily removed by the cautery loop. Microscopical examination showed the tumor to be a spindle-celled sarcoma. A year and a half later the patient presented himself with an infiltrating, indurated tumor at the base of the tongue. Total extirpation of the tongue was performed, together with excision of the epiglottis and the hyoid bone. Two days after the operation he died from pneumonia. The tumor was found to be a carcinoma. The author considers the case as one where two independent malignant growths presented themselves, each arising from separate organ and tissues, a number of similar cases being known.

Contribution to the Technic of Nerve Suture.—A method for bringing about union between the ends of divided nerves is suggested by C. FORAMITTI (*Deut. med. Woch.*, Vol. 73, No. 3), who proposes to insert these ends into sections of fresh or hardened arteries. The tubes may be prepared from the fresh arteries of animals, or sections of the latter may be drawn over glass rods the exact size of the caliber of the vessel, and then hardened in formalin, washed with water, boiled, and then preserved in alcohol. The extremity of the divided nerve is caught with a thread of catgut which is passed through the lumen of the tube. The latter may then be shoved over the end of the nerve. The same catgut thread may be then attached to the other end of the nerve and this likewise drawn into the lumen of the tube. Both ends are then held in place by this foreign body. The experiments have been successfully conducted in dogs without producing any reaction, and the author suggests that the method be given a trial in the human subject.

Diagnostic Value of Blood Examination in Surgery.—TUFFIER is reported in the (*Gazz. deg. Osped.*, November 29, 1904, as follows: Cryoscopy of the blood is now a method of value in the diagnosis of renal disease. Whenever the increase of molecular concentration of the blood shows a persistent insufficiency of the kidneys, nephrectomy ought not to be performed. Unfortunately this method does not give constant results in renal disease; the increase of molecular concentration does not always indicate a bilateral lesion, and even in insufficiency or uremia, the point of molecular concentration may be normal or sub-normal. The hemoglobin index is valuable. Mikulicz does not operate if it is below 38 per cent., except by means of local anesthesia. Bloodgood and Cabot do not believe in general anesthesia if the hemoglobin is below 40 per cent. The study of the red corpuscles is of less importance to surgery. The iodophil reaction of the leucocytes in suppuration is interesting. Locke in 800 cases claimed great value to the test in demonstrating the existence of a focus of suppuration. It has been obtained however in gonorrheal rheumatism.

The presence of leucocytosis is valuable in pointing to hidden purulent inflammation, especially in appendicitis, and a disproportion between the temperature and the leucocytosis is even more important. In rupture of one of the viscera following a contusion of the abdomen, Cazin has demonstrated a rapid increase of leucocytes. In intestinal perforation in typhoid fever, the hypoleucocytosis suddenly changes to hyperleucocytosis. In carcinoma, a gradual diminution of the red corpuscles, an equal decrease of hemoglobin and a polynuclear leucocytosis is suggestive of malignancy. In gynecology may or may not assist in diagnosis.

Treatment of Cancer.—It is not at all certain that Koch's laws will be valid for the forms of parasites other than bacteria, which are gradually being shown to take a prominent place in the infections of the human body. MAYO-ROBSON (*Lancet*, December 3, 1904) states that we know nothing at present conclusively as to the etiology of cancer. Councilman has shown that vaccine bodies form one phase of the life history of the protozoan said to cause smallpox, and Roswell Park regards the cell inclusions in cancer as being of the same nature. At the Royal Institute, a microscope was exhibited, which showed objects distinctly under a magnifying power of 10,000 diameters. In order to understand what this means, a house-fly under this magnification would appear 24 feet long by 13 feet broad. This instrument will undoubtedly bring to light many hitherto absolutely unknown and unthought of conditions. As to the infectivity of cancer, the author states that it is both contagious and innoculable. So positively is this now known that all dressings from cancer patients should be burnt and that common use of beds and utensils should not occur. Preventive operations should be practised on precancerous conditions. Most of these are found in the skin, occuring as warts, eczematous patches, sebaceous tumors, ulcers, scars, etc. When these occupy such a position that they are liable to irritation, they should be excised, and under any conditions, the mere enlargement, without any other significant signs of malignancy, should constitute sufficient grounds for their immediate excision. The precancerous conditions in the mammary glands, such as eczema of the nipple, chronic inflammatory enlargements, cysts, and induration from traumatism. In the presence of these lesions, delay is inadmissible. Precancerous conditions of the stomach are considered under the one general heading of ulceration, the conclusion being that ulcers should be removed. The precancerous conditions of the pelvic organs of women, particularly those who have had lacerated cervices, old ulcers, leucorrhea and other forms of endometritis are discussed. Conditions which are termed precancerous in the intestines, are considered by the author and he urges the use of the electric sigmoidoscope as the only means of determining papillomatous conditions which may reasonably be looked upon as precursors of malignant change. As to the radical treatment of cancer, he quotes Halsted's ultimate results in 161 cases. Of these 42⁵/₁₀ per cent were positively cured, 51⁶/₁₀ per cent survived the three years' limit. Cancer of the stomach, according to the statistics of Kocher, is by no means hopeless. He has performed 97 resections of the stomach. Of these 52 cases or 65⁴/₁₀ per cent. recovered; 34⁶/₁₀ per cent. died. From 1898 to August, 1904, 45 cases have been operated on with 82²/₁₀ per cent. recoveries. As to definite results, 51 of the whole series died later, living up to six years. The average being 18⁷/₁₀ months. Twenty cases are still living, the oldest one of the series having been operated upon 16 ¼ years ago. Nineteen are in good health. Of Mayo's 43 operations, several are well more than two years after the operation. The statistics are given of the results of radical operation for malignant disease of the tongue, the larynx, the intestine, the rectum, the gall-bladder and liver, the lip, the penis, and the uterus. Some crusade, the author urges, should be taken against the neglect of the well-known early symptoms of early form of cancer, but of uterine malignant growth in particular.

Modern Bullet Wounds.—The Russian-Japanese war will undoubtedly cause a revision of the entire

subject of bullet wounds. The old-fashioned lead bullet has been displaced by the small caliber nickel-jacketed missile, driven by smokeless powder. The Japanese bullet is smaller, has greater penetration, flatter trajectory and greater range. FRANK W. FOXWORTHY (*Annals of Surgery*, December 4, 1904) believes that the difference between these and the Russian wounds will be very little, as all high-velocity bullets give practically the same wounds. The increased velocity has no bearing on wounds in the soft tissues, its most obvious ill effects being found on the nervous system. The one exception to this rule is in the case of brain wounds. Heads struck by modern bullets frequently have a small wound at entrance, while the entire opposite side of the skull is blown off together with more than half the cranial contents. The track of a normally flying bullet through the body is straight, no structure in the body being dense enough to interfere with its direction. It bites out pieces of nerves and blood vessels, comminutes dense bone and perforates cancellous bone. English and American surgeons place abdominal wounds in the following fatality order: (1) Spleen wounds, most fatal of all; (2) perforating wounds of the small intestine and mesentery; (3) wounds of the stomach; (4) wounds of the large intestine; (5) wounds of bladder; (6) wounds of liver; (7) wounds of kidney; (8) non-perforating wounds of the intestine; the least fatal of all. Treves has formulated the following rules; In penetrating abdominal bullet wounds, he advises operation if (1) patient is seen before seven hours have elapsed; (2) patient has had an empty stomach when wounded; (3) patient has had a short and easy transport. He advises non-interference if (1) patient not seen until seven hours have elapsed; (2) there has been a long and tedious transport; (3) patient has been wounded soon after a meal; (4) the liver, spleen, or kidney be wounded; (5) it be a transverse or oblique wound above the umbilicus; (6) the bullet is retained; (7) the wound be below umbilicus, as in this locality the patients generally get along all right. (8) the colon alone be implicated (except the transverse).

Closing Wounds of Larger Arteries.—No one can operate many times without inadvertently wounding an important artery. GEORGE EMERSON BREWER (*Annals of Surgery*, December, 1904) recites the history of a case in which he, while doing an ordinary Bassini operation, he cut the femoral artery with a Hagedorn needle, and after ineffectual attempts at suturing, was obliged to tie the artery. This experience forcibly presented to him the desirability of perfecting some technic of closing such wounds. At the Surgical Laboratory of Columbia University he carried on a series of experiments on large dogs, during which he evolved the technic which is singularly successful and practical. The technic depends upon the employment of an elastic arterial plaster, which is wound around the artery, extending well above and below the wound. Such material must be thin, elastic and capable of maintaining its elasticity for several days after being imbedded. No suture will hold in a sclerosed or calcified wall, but such a preparation should work equally well irrespective of the condition of the artery. The vessel to be experimented upon is brought to the surface of the wound and compression is then made approximally and distally. The part is then thoroughly cleaned with sponges saturated with ether. A strip of the plaster is then passed beneath the vessel and the two corners are held by artery clamps. The elastic is then gently stretched and the lower extremity placed in contact with the vessel, while the upper is drawn upward. This causes the vessel to rotate so that the surface of the plaster come in contact. A rotary motion of the thumb and forefinger completes the technic. The most important point in the successful application of this method lies in the employment of exceedingly thin and adhesive plaster, and second, in the obtaining of perfect asepsis.

The Present Status of Prostatic Surgery.—This department of surgery has made tremendous strides in the last decade. Ten years ago J. WILLIAM WHITE (*Annals of Surgery*, December, 1904) reviewed the conditions of prostatic surgery up to that date and again to-day he dwells upon the same topic. It is well known that a decade ago he regarded castration as curative of prostatic hypertrophy for the reason that he believed it to be the result of a persistance of the testicles after the need for these organs had disappeared. The theory seemed logical, but has unfortunately not been supported clinically. In his present article, however, White states that Robsing has recently reported five cases of double castration. In three of these, there was no history of previous gonorrhea, and the results were extremely favorable. The two remaining cases showed no improvement, but it is interesting to note that both were gonorrheal. Referring to palliative treatment, the author states that it still consists, as it did ten years ago, either in the use of steel sounds or in the employment of the catheter. He considers that the attitude of the professional should be rather toward early operation than toward palliation. He concludes that the objections to habitual catheterism are: (1) the risk of vesicle infection; (2) the production of vesicle atomy. He considers that the section of the neck of the bladder by Bottini's method and its modifications should in fairness be regarded as still on trial. It may be that surgeons are correct in dismissing castration and vasectomy from consideration. Neither of these methods have been given suitable trial by the profession. Since Robsing in 1902 reported 40 cases of vasectomy, of which 27 were cured, 9 relieved and 4 unimproved, there have been no notable papers on the subject. In the last ten years, White has found but 15 cases in which he considered castration justifiable and 37 in which he has performed vasectomy. The results were gratifying. The extraordinary results of total extirpation by improved technic have cast into unreserved shadow more conservative methods which still deserve recognition.

PHYSIOLOGY.

Ethyl Alcohol Considered as a Food.—There is probably no question before physiologists and practising physicians which has remained longer in an unsettled condition than this one. W. H. GODDARD (*Lancet*, October 22, 1904) gives a history of a large number of experiments on dogs from the study of which he reaches a number of interesting conclusions. The animals weighed each about ten kilograms and they were thoroughly purged and subsequently starved for twenty-four hours. Sixteen grams of alcohol was then given, after which the animal was placed in a respiration chamber and the expired air as well as the urine passed during the time collected. The animal was then killed and the body examined for all the carbon compounds, with the exception of the carbonates previously enumerated as derived from alcohol. Another dog of similar weight was then used, the amount of alcohol being doubled. The examination of this animal was made

identical with that of the first. Lastly, double the quantity of alcohol to that in the last instance was given and the same methods pursued. The author concludes from his experiments that when alcohol to the amount of $^1/_{10}$ part of the body-weight was administered a little more than five per cent. of bad alcohol was excreted, and since no aldehyde or other alcoholic derivatives were found in any part of the body or in the excreta of the animal after death, one may conclude that 95 per cent. is used as a food. When double the quantity of alcohol is given a little more than 65 per cent. is excluded and here, for the first time, acetic aldehyde makes its appearance in the expired air. This may perhaps justly be interpreted as an indication of a failure on the part of the animal system to deal with so large a quantity of alcohol, and more especially so since at the same time there is no aldehyde in the urine or elsewhere in the body. When as in the last set of experiments, very large doses are given, nearly 50 per cent. of alcohol or its equivalent is excreted. There is thus to be noticed an absolute failure on the part of the body to utilize half of the alcohol administered. The compounds into which the alcohol has been formed are aldehyde, alkaline acetates, alkaline carbonates and probably carbon dioxide and water. Other carbon compounds excreted from the animal may exist in addition to these, but they are not distinguishable by the chemical methods employed. In small doses, therefore, alcohol is most undoubtedly a food, but inasmuch as half of it is excreted from the system when large doses are given, it cannot then be considered a food in the proper sense.

The Function of the Tonsil.—An interesting contribution to this subject is made by G. B. WOOD (*Univ. Penn. Med. Bull.*, October, 1903), who has made careful histological studies and brings forward three propositions for discussion. These are (1) the older forms of leucocytes are derived by a continuous development from the younger lymphocytes. He thinks the lymphoid cell must be considered to be a young form of leucocyte capable of growing and undergoing certain morphological changes. (2) The lymphocyte is originally derived from the epithelial structures. In this connection the thymus gland plays the most important rôle. Recent research has practically established the fact that there is a direct conversion of the epithelial cells into lymphocytes in the center of the ingrowing sprout of epithelium in the thymus, before any outside structures could have influenced this metamorphosis. (3) There exists a strong histological evidence that lymphocytes are directly derived from the epithelium of the tonsillar crypts. In the development of the tonsil there is an ingrowth of epithelium into the mesodermic tissue before any lymphoid cells can be seen in this region. The first lymphocytes in the tonsil are found directly around this epithelial ingrowth and are characterized by fine anastomosing processes of protoplasm. A careful histological study has convinced Wood that the epithelium of the crypts exhibits a marked tendency toward constant growth. This is shown by the penetration of the epithelial cells into the parenchyma of the tonsil and the formation of keratoid masses in the lumen of the crypt. There also exist transitional cells by which all stages may be traced between the epithelial cell and the lymphocyte and the variation of types in the latter is most marked in the region of the cryptal epithelium. The degree of infiltration of the epithelium holds no relation to the cryptal contents. On the other hand, the ingrowing sprouts of epithelium possessing no lumen, show as much, if not more infiltration than the true crypts. The complete destruction of the cryptal epithelium is a rare occurrence, almost always a sufficient number of epithelial cells being left to provide an intact barrier along the surface toward the cryptal lumen. The author thinks he is justified in saying that the truth of his three propositions has been established, and that an affirmative answer must be given the question, "Is the tonsil a primogenial source of leucocytosis"? If to the tonsils is accorded the function of leucococytic primogenesis, their presence in the human economy is explained. The leucocytes are intimately connected with various tissue changes, and the tonsils are the largest and most fully developed at the time of life when tissue changes are most active,—in childhood. The tonsils take up the function of the thymus gland after this atrophies earlier in life. Furthermore the author thinks that the adenoid tissue in the adult may be carrying on the same work which was accorded the tonsils in childhood.

Venous Valves in Relation to Varicose Veins.—That the venous valves play a less important rôle in the mechanism of the circulation than is usually taught, is the opinion of LEDERHOSE (*Deut. med. Wochenschr.*, Oct. 20, 1904). He does not believe that the valves support the column of blood in the veins of the lower limbs, or that these are a feature in accelerating the blood stream or prevent regurgitation in sudden changes of position in the limbs. It is also known that the number of veins decreases with increasing years. The author's theory is, that in most cases the valves play no part in adjusting the circulation, but that this is effected by retrograde stasis and variations in speed. The writer applies this theory to the cure of varicose veins by the Trendelenburg method of ligating the saphenous vein. The aspirating effect of the movements of the large joints on the vessels causes blood from the femoral vein to be drained out more rapidly in the act of walking, and if the saphenous vein has been ligated, the varicosities can more easily discharge their contents into the deeper vessels without reveiving any additions from the long column of blood in the saphenous vein.

Action of Ammonia Compounds of Some Metals.—J. BOCK (*Arch. f. exp. Path. u. Pharmak.*, Vol. 52, Nos. 1 and 2) has carefully studied the action of certain ammonia compounds of metals on animals with the following results: In frogs the hexamin cobaltic salts behave as strong poisons, giving rise first to a paralysis of the peripheral motor nerves, later to clonic muscular switchings and convulsions owing to irritation of the medulla spinalis. In guinea-pigs, tetanic convulsions are very typical. The aqua-pentamin compounds (one ammonia group replaced by water) possesses much less toxicity, but gives rise to the same train of symptoms. With still more water in the molecule, the poisonous qualities are gradually lost. The chloropentamin compounds show, in addition, a decidedly narcotic action upon the brain and the same diminution of toxicity is observed if radicals of water are introduced. The carbonatotetramin compounds are almost innocuous. Though metallic cobalt, and its simpler inorganic compounds, possess distinct toxic properties for cold and warm-blooded animals, nothing of this is observed in the more complex ammonia salts. The cation alone seems to be active, in proportion to the amount of ammonia it contains. This observation is also borne out by the fact that the corresponding salts of other metals, such as rhodium and chromium, have the identical action, though the metals themselves and their simpler salts behave differently.

Action of Hexamin Cobalt on Motor Nerves.—The action of hexamin cobalt (a base consisting of one atom of cobalt combined with six molecules of the

radical ammonium) is peculiar since no other known substance behaves similarly. J. Bock (*Arch. f. exp. Path. u. Pharmak.*, Vol. 52, Nos. 1 and 2) finds that if injected into frogs in small, non-fatal doses, general, fascicular, clonic, muscular twitchings will appear, owing to irritation of the motor nerve-trunks. Similar compounds of rhodium and chromium show the same symptoms, hence the specific action resides within the cation (the six molecules of ammonium).

PATHOLOGY AND BACTERIOLOGY.

Experimental Streptococcus Arthritis.—It has been found by R. I. Cole (*Jour. of Infect. Dis.*, November 5, 1904) that arthritis and endocarditis may be produced by the intravenous inoculation of rabbits with steptococci from various sources, and the results obtained are quite similar to those described as resulting from the so-called *Micrococcus* or *Diplococcus rheumaticus*. Therefore, the description of a distinct variety or species of streptococci based on this property of causing endocarditis and arthritis is unwarranted. Whether the evidence is sufficient that acute rheumatic fever is simply a form of streptococcus septicemia is not discussed by the author.

The Dangers of the Microscope in the Early Diagnosis of Pulmonary Tuberculosis.—H. C. Clapp (*Am. Med.*, December 10, 1904) calls attention to the fact that even now many physicians, no matter what their theoretic belief, practically often act on the supposition that absence of tubercle bacilli in the sputum on two or three examinations means absence of tuberculosis. This comforting assurance from their trusted medical advisers often induces patients to neglect proper treatment until the stage of incurability is reached. Cases are quoted from his records in the Massachusetts State Sanatarium, at Rutland, showing that when tubercle bacilli have been found in the sputum of patients, they are not by any means uniformly present at each examination, but often fail to appear for long periods, or are irregularly present. So that microscopical examinations, which happen to be made only at such times, would be very misleading in diagnosis. Cases are quoted, undoubtedly tuberculous, in which the microscope failed to disclose tubercle bacilli. If the physician should wait until the microscopical evidence was conclusive, the patient might sometimes lose the golden opportunity for recovery. Not always, but often the skilled diagnostician ought to be able to recognize the disease before enough ulceration and cavitation (surely not the very earliest stage) have occurred to allow the escape of the bacilli from the lung substance into the sputum.

Piroplasma Hominis and Certain Degenerative Changes in the Erythrocytes.—Charles F. Craig (*Am. Med.*, December 10, 1904) publishes the results of his investigations concerning *Piroplasma hominis*, claimed by some investigators to be the cause of "spotted" or "tick" fever, and concludes that no such organism can be demonstrated in the blood of patients suffering from this disease. Dr. Craig is convinced that the phenomena observed in the red blood cell were not due to a parasite but to certain changes, especially in the hemoglobin of the red cell, produced by disease. He believes that future research will prove that peculiar areas occurring within the red blood cell, chiefly those devoid of hemoglobin and occurring in human diseases, have been mistaken for a protozoan parasite by the investigators who have demonstrated *Piroplasma hominis*. The author refers to the report of Stiles, who was also unable to demonstrate the parasite after a thorough investigation of ten cases.

PRESCRIPTION HINTS.

Treatment of Dysmenorrhea.—Every practitioner knows how painful and troublesome dysmenorrhea is, and the following counsel given by M. Dalché on the affection may be useful. The first thing to be done is to discover the cause of the malady. Constipation should be avoided as well as intellectual and physical fatigue. To ease the pain, simple means may be at first enjoined—rest, warm applications, belladonna suppositories. An enema may be given in the morning with:

℞ Antipyrin .....15 grs.
Laudanum .....20 drops.

Or the following ointment:

℞ Extract of hyoscyamus.....½ dr.
Extract of belladonna.....½ dr.
Vaselin .....1 oz.

As to applications of ice, recommended by some, they are dangerous, for if they ease the pain they may arrest the flow of blood. A German author, Fliess, having found that there existed regions of the mucous membrane of the nasal fossæ constituted of erectile tissue, remarked that when the ovary became turgescent the mucous membrane of the nose was similarly affected. Hence he wanted to endeavor to calm the pain of dysmenorrhea by touching the nasal cartilage with a solution of cocaine and with some success.

M. Dalché tried the method of Fliess with satisfactory results in some cases. When the blood is normal in quantity at each period, antipyrin should be prescribed in 15 gr. doses, associated with 10 grs. of bicarbonate of soda, or 6 grs. of pyramidon. Dr. Huchard recommends:

℞ Tincture of piscidia erythrina.....10 grs.
Tincture of viburnum prunifolium....10 grs.

Twenty drops four or five times daily.

For lumbar neuralgia, ichthyol externally is very efficient.

℞ Ichthyol .....2 dr.
Chloroform .....3 dr.
Camphorated spirits.....2 oz.

Between the periods cannabis indica should be prescribed.

If the flow was excessive (menorrhagia), the fluid extract of hydrastis canadensis is indicated (20 drops three times a day). If, on the contrary, the flow is insufficient or slow to appear, general tonic treatment should be ordered with ovarian opotherapy. Where the menses are entirely irregular, cold bathing, corporal exercise, gymnastics, and ovarian opotherapy will render good service. Marriage might also be recommended.

Neuralgia.—For anemic and debilitated cases the following is worthy of a trial:

℞ Ferri reducti.....gr. c (6.00)
Acidi arsenosi.....gr. iv (.26)
Phosphori .....gr. i (.065)
Extracti nucis vomicæ.....gr. xxv (1.60)

Misce. Fiant pilulæ No. c.

Sig. One pill after each meal.

Chilblains.—Used when red and inflamed, but skin remaining unbroken:

℞ Ichthyoli .....f3 ii (8.00)
Unguenti potassii iodidi..... 3 iv (16.00)
Olei terebinthinæ..... .....f3 i (4.00)
Adipis lanæ hydrosi.....q. s. ad ʒ ii (64.00)

Misce.

Sig. Spread upon new unbleached muslin and apply.

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SHOULD OUR PRIVATE HOSPITAL SYSTEM BE CHANGED?

THE "Hospital Trusts" of New York are warmly attacked by an anonymous "M.D." in a recent issue of the New York *Sun*. In the opinion of this redoubtable champion of equal rights, it is a debatable question whether the management of large private hospitals in New York is "along lines which are productive of the best results." The *Sun's* correspondent thinks that the much-advertised annual deficits (which, by the way, since the hospitals are not actually in debt and do not get into debt, are really only arbitrary expressions of the amount of work that hospital managers would like to do) would speedily disappear if the hospitals were made a free field for the entire medical profession of the metropolis.

It is no doubt true that empty wards could be filled by opening wide the doors of hospitals to the general profession; but it is by no means certain that such a course would result in increasing the relative incomes of the institutions practising it. Elsewhere, in his argument, the *Sun's* correspondent points out that the great private hospitals often refuse admission to needy patients because the care of such patients would add to their deficits.

The deficit, however, real or imaginary, is not the subject which chiefly interests us here. We are particularly concerned with the proposal that hospitals be made free to all practitioners, first on the theory of equal rights, and second in order that patients entering hospitals may be enabled freely to choose their physicians. Is this proposal a practical one, worthy of the serious consideration of hospital managers, or is it an unwarranted and mistaken application of a mere social theory?

Outside of New York there are many hospitals, both municipal and private, in which "every physician in good standing is accorded the privilege of attending his own patients in both wards and private rooms." We cannot agree with the writer in the *Sun*, however, when he states that such hospitals are to be found "in many of the large cities of this country." In large cities the typical hospital is a large hospital, and large hospitals cannot be managed in the same manner as institutions of less size. In the smaller towns a large proportion of hospital patients pay for their support as hospital inmates, and hospital managers therefore find it profitable to keep their beds full. If in order to do this it becomes necessary to open the doors of the hospital to the general profession, this is done; and since the total number of physicians in the locality is small, no disorder follows. But can any one who knows intimately the work of a large metropolitan hospital seriously maintain that this method can be applied in an institution of the latter class with similar results? Imagine the nurses and house officers of St. Luke's, with its two hundred or more beds, maintaining professional relations with and receiving orders from one hundred or one hundred and fifty non-resident physicians of unknown antecedents, irresponsible to the trustees of the hospital, free to order and to use in their discretion expensive medical and surgical supplies, enjoying the right to transfer or discharge patients at will, permitted to operate with or without suitable previous experience, and owning no credentials but a license to practise medicine in the State of New York! Imagine two hundred and fifty physicians rioting uncontrolled in the wards of Mount Sinai Hospital; or six hundred clamoring for the use of the operating rooms at Bellevue! Are such conditions thinkable? Would such a system justify itself in a city like New York?

It is truly a pity that in Manhattan and the Bronx scarcely one physician in ten enjoys the

privilege of an up-to-date hospital. It is indeed an arduous task for the remainder to achieve professional or scientific eminence; hence we are prepared to welcome and approve any associative or philanthropic measure which promises relief to the excluded majority. But such relief never can be obtained by the means proposed in the *Sun*, and it is idle to waste effort in agitating the impossible.

If the middle and lower classes in New York ever choose to organize benevolent or cooperative societies which shall establish small hospitals in which members may be treated by their family physicians without restriction; or if groups of physicians in the various city localities find it worth while to band themselves together in associations for the purpose of equipping and operating small clinics, a change in the distribution of professional opportunities will result. Thus far neither the laity or the profession in Manhattan have found it worth while to take such steps; and until they do, the majority of our physicians will have to be content to be received in New York's hospitals as guests.

IN A YELLOW LIGHT.

FAMILIARITY breeds not only contempt but tolerance as well, and deplorable conditions constantly before our eyes are far too apt to be taken as a matter of course. Under such circumstances we should be grateful for anything that may serve as stimulus to a fresh point of view and show us the familiar evils in all their essential menace. Such a service has been rendered, albeit with a light and entertaining touch, by the chapter on "The American Doctor," in "As a Chinaman Saw Us," reprinted in this week's issue of the MEDICAL NEWS.

The Chinaman "saw" nothing new, nothing that we do not see ourselves, but he saw it as one sees new phenomena, undulled by use, and enables his American readers to share, temporarily at least, his point of view. It is not necessary to accept all his conclusions as to the comparative superiority of his own country, nor even to believe the anecdotes of individual gullibility on the part of American patients and blundering on the part of American surgeons, many of which tales bear the hall-mark of the Yankee joke-smith. The actual facts, as we know them, supply quite sufficient food for reflection, and the records of the daily "Saunterer About Town" furnish incidents that are more startling than any the Chinaman reports, if not quite so artistic in finish.

It is, as has been said, in the presentation of a fresh point of view that the value of his service lies. We have all seen the advertisements of the patent medicine man monopolizing acres of hoardings in town and country, and, in the aggregate, acres also in the newspapers. We know in a general way that these nostrums are worthless and worse than worthless, and that such enterprises are not only supported but enriched at the expense of the people in general. Once in a while, stimulated by the dramatic discovery of fatal effects in some given case, a brief crusade is directed against such evils, but it invariably dies out, as a result of the apathy of the public. The same thing is true of the various "fake" cures and cults of a pseudomedical nature. Those who are involved in them naturally shut their eyes to criticism, and those who see their absurdity content themselves with seeing that and ignore their dangers. We have accepted as regular concomitants of American life Blank's Universal Panacea, Prof. Gullem, Hypnotist and Oriental Magnetic Healer, and all the innumerable multitude of that ilk. Secure in the carelessness of the American public they reap their harvest merrily and only occasionally come to grief at the hands of the Board of Pharmacy, or some similar organization.

It is axiomatic that in this country the only effective, if somewhat slow weapon is the "campaign of education." The impossibility of enforcing laws which are not actively supported by public opinion has been repeatedly demonstrated, and this fact makes more threateningly significant the appalling proportion of persons in the toils of the spoiler and the indifference of those who are not his victims.

The physicians of the country can do little, unsupported by the people at large, and their efforts must therefore be directed to awakening and securing this support. To further this object, the Chinaman's chapter alluded to might well serve as a tract. Anybody could tell funnier or more extravagant stories of the vagaries of Christian Science and "Kickapoo Liniment," but he has given us a positively startling impression of the mass effect of all these empty pretenses upon an unprejudiced observer. The bulk of this incubus in American life is what strikes the Chinaman and the Chinaman's reader. With a sort of refined selfishness we are apt to tolerate an evil which owes its existence to an ignorance

or prejudice to which we feel ourselves superior. *We* know better than to take irresponsible patent medicines, *we* know better than to try to cure pneumonia by "absent treatment" or musical tones. Why then trouble ourselves about those who do? But when we read the Chinaman's summing up we cannot but recognize the gravity of the situation. "It is not overstating facts when I say that three-fifths of the people buy some of these patent nostrums which the real medical men denounce, showing that the masses of the people are densely ignorant, the victim of any fakir who can shout his wares loud enough. In China such a thing would be impossible; the block would stop the practice."

There seems to be no reason to doubt his statement of the proportion of victims, and how shall we combat his conclusion that "the masses of the people are densely ignorant?" It is almost enough to make us long for the Chinese method of settling the question, but in default of the block we can only have recourse to the "campaign of education." Obviously, the "three-fifths" cannot be expected to assist, except as each one cries up his own favorite delusion by crying down the others, and it therefore devolves upon the sane remnant to hold up the hands of the physicians who are striving to combat this evil.

Whether the prognosis is hopeful or not it might be hard to say, but let us choose the part of the optimist, and believe that common sense will eventually triumph and make it possible for even a Chinaman to find our people enlightened and civilized.

A CONTRIBUTION TO CANCER ETIOLOGY.

AFTER many years of almost persuasion on the part of pathologists that malignant disease of all kinds was due to a parasite, there has come the inevitable reaction, and now the trend of thought is back toward the original opinion that it is a tissue fault.

Recent investigations have pointed particularly to two conditions in tissues which seem to indicate the basis of malignant degeneration. One is a reversion apparently to the reproductive type of cell, so that multiplication and a certain independence of generation become the most characteristic feature of cell life. The other partook more of the reversion to the embryonal type of which so much was to be heard twenty years ago. It seems as though some irritant of very powerful character is required to send cells back to these reversionary types, and it may possibly be that this irritation is supplied by a parasite.

There are, however, a number of indications in recent literature that would seem to emphasize the fact that a merely mechanical irritation frequently repeated and sufficiently prolonged may under favorable circumstances, prove quite sufficient to account for the origin of cancer.

At the last meeting of the New York State Medical Association, New York County Branch, held November 21, 1904 (see Society Proceedings, MEDICAL NEWS, page 40), during the discussion of the dangers of the X-rays, attention was particularly called to the fact that in a considerable number of reported cases, cancer had developed in the midst of a scar due to a deep burn by the X-rays. In some of these cases, the burn has been not on the patient but on the physician. In one case the most notable feature of the affection was that the malignant neoplasm was multiple. Amputation was required first of one hand and then of the other, and subsequent amputations in the arm had to be performed and the end of the case remains to be seen. This is a most interesting feature of X-ray work, since the very agent which it had been hoped would lessen the mortality from cancer, has added to the incidence as well as the fatality of this dread affection.

It has been a constant search for many years to find some agent that would produce cancer. Now it has been found masquerading under the guise of what was hoped would be, and has actually proven to be, in certain cases, a most efficient remedy for the disease. It is not easy to conclude as to the significance of these facts. One thing, however, seems to be very clear, that the persistent irritation of scar tissue constantly contracting, as is so typically the case in the healed deep burns, produced by the X-rays, forms the most suitable condition for the development of malignant disease. Of course, this has been known before. It is at the pylorus, in the stomach and at the flexures in the intestines, that is, just at those parts of the gastro-intestinal tracts which are most liable to injury and most likely to be the location of persistently contractile scars that cancer develops. With the X-rays, however, these effects have been produced experimentally under conditions, all of which were perfectly open to observation.

It is easy to say that the scar tissue, owing to its lowered resistive vitality, may well have pre-

sented a favorable nidus for the growth of a cancer parasite. The mechanically irritant effects of contracting connective tissue upon tissues of higher orders have ever been considered to have a prominent place in the etiology of the disease. Pigmentary irritation as by moles, or the frequently repeated irritation to which warts are subjected, furnish further confirmatory examples of this fact. It would seem that parenchymatous tissues, especially of the epithelial variety, when subjected to constant irritation for prolonged periods, revert to that embryonic activity, and reproductiveness, which constitute the very essence of cancer. Unfortunately, it appears probable that there will be further opportunities for the study of such conditions as productive of cancer in the very near future. Let us hope that the chances thus afforded for actual observation will not be lost.

The cost of the precious lesson that physical energies, whose scope and limitations are not well determined, cannot be employed with impunity in medicine, falls on physician as well as patient in this case. Its warnings and its teachings must not be neglected.

ECHOES AND NEWS.

NEW YORK.

Appointment at Bellevue Hospital.—Dr. Edwin Sternberger has been appointed assistant visiting physician to the Fourth Medical Division of Bellevue Hospital.

Quacks and Newspapers.—On January 23, 1905, before the Medical Society of the County of New York, at its regular meeting in the Academy of Medicine, Mr. Champe S. Andrews, counsel for the Society, will deliver an illustrated lecture entitled "A Century's Criminal Alliance Between Quacks and Newspapers." It will be an exposure of the methods used by the so-called "Specialists in Diseases of Men Only," and their corrupt relations with some of New York's newspapers.

Spitting in the Subway.—The conspicuously dirty condition of the roadbed of broken stone, in front of the station platforms, already indicates the justice of the Health Board's criticism. The more dangerous, although less obvious, defilement of this germ trap by spitting and by secretions from the nose and lungs, which cleaners ostentatiously disinfect on some of the station platforms and stairways, is constantly occurring with no apparant attempt to prevent it. There are no signs prohibiting either smoking or spitting in the stations. Nine men out of ten will expectorate on the roadbed rather than the platform, and feel that they are showing special breeding and thoughtfulness by doing so. As a matter of fact, they are depositing the material in a more dangerous place, as the platform is occasionally cleaned.

Death-Rate Higher.—November deaths for the fifteen years preceding 1903 in this State averaged 280 a day. November, 1904, had an average of 339. This increase is in excess of the birth rate, the death rate being 16.0 against 15.2 for the last five years. Acute respiratory diseases, 72 per cent. of which were from pneumonia, caused 250 more deaths than the average of the month; diseases of the circulatory system 200 more; those of the urinary system are 15 per cent. above the average, 8.0 per cent. of the deaths of the month have been from Bright's disease. There is also a large increase this month in the cancer mortality. The chief cause of increase in the mortality of the month is pneumonia, which caused 1,220 deaths, against 800 in October; 12.0 per cent. of the total mortality was from this cause, against 9.4 per cent. last November, and 8.0 per cent. in October of this year.

Beth Israel Hospital's New Property.—At the annual meeting of the Beth Israel Hospital Association, held last week, the report of the board of directors was read by President Joseph H. Cohen. During the current year the six-story building on Jefferson Street, adjoining the present hospital building, has been purchased for the sum of $71,000, so that the Association now owns the entire block between Jefferson and Cherry streets. The number of free patients during the year was 1,435; the number of pay patients was 194. The number of applicants approved, but who were refused admission for want of room, amounted to 902. The average length of stay for each patient was 23⅞ days, and the death-rate was about 10 per cent. In the dispensary 40,022 patients were treated. The total receipts were $95,742, and the expenditures $62,781.54. The present membership is 3,112, an increase during the year of 1,208.

School War on Disease.—The proposition to teach public school children about consumption, how it is spread, and how to avoid catching it, which, it is said, Governor Higgins strongly favors, is a step in the right direction, but only a step. There is no reason why the teaching should be limited to tuberculosis. The other infectious diseases, diphtheria, pneumonia, typhoid fever, etc., questions of eating, of clothing, and of ventilation, are of first importance in determining the health and comfort of the individual. There is no practical instruction whatever at present given in the schools regarding the majority of these subjects, and even the modicum of physiology provided is a perfunctory and almost useless study. Every child ought to be taught enough to enable him to avoid the most obvious dangers, and to keep him out of the hands of the great army of quacks, which exists and flourishes only through the ignorance of the people regarding the elementary laws of health.

Lecture of Dr. Flexner.—Professor Simon Flexner, of the Rockefeller Institute, on December 21, delivered a lecture previously announced in these columns, "On the Action of Snake Venom." Dr. Herter introduced the speaker in a few well-chosen words, the audience applauding for fully five minutes after Dr. Flexner arose. The most important work on snake venom was done in this country by Weir Mitchell to be followed later by that of Reichert. This work was basic, it has been added to but has never been controverted in its details. Some snake-bites are very poisonous which seems to depend upon the different kinds of venom, these differences are more pronounced the larger the quantity introduced. The cobra and the vipers may be taken as types, some of the poisons are intermediate in character between the cobra and rattlesnake venoms, the character of the local lesion in poisoning by the rattlesnake is the hemorrhage developed there. The symptoms of cobra poisoning are an anxious expression, interference with respiration, and death. It kills chiefly by the action of the poison on the respiratory center in the medulla, no clot formation takes place. The symptoms caused by rattlesnake bite are

almost *nil*, since death is instantaneous. On post mortem the heart is still pulsating, the right heart being occupied by solid red clots,—the poison has little effect on the respiratory center. In experimental work rapid injection gave almost instantaneous coagulation, while slow injection showed absence of coagulation. All venoms can destroy animal cells but the cells destroyed are by no means always the same. The cobra poison acts chiefly on the blood cells and those of the central nervous system and contains an energetic hemolysin for red blood cells with a neurotoxin for nerve cells; both cause solution indirectly. The hemolysin attaches itself to cells through the amboceptor and the venom is inactive in absence of a complementary substance, which may be single or multiple. Lecithin is the most stable complementary substance. Injection of venom into the peritoneal cavity causes thrombosis of vessels, and also a neuro-intoxication which was proven experimentally on the rabbit, the venom attacks the endothelial lining of blood vessels and gives extravasation of blood into the cavities. Animals poisoned by venom quickly putrefy because of destruction of normal bactericidal powers of blood. Snake venom produces antibodies and therefore an animal can become tolerant of it. Antivenine against vipers cannot be prepared because immunization cannot be effected on account of local effects and destruction of tissue by bacterial invasion and death of animal from secondary causes. Venom is modified by heating or by treating with hydrochloric acid, but by so doing its combining power is somewhat destroyed and good results are difficult to obtain.

PHILADELPHIA.

Inquests During 1904.—According to the statement issued by the Philadelphia Coroner, 3,467 autopsies were made during the year just ended. The number of deaths due to alcohol was but one-half as great as during 1903; there were 43 murders which is 15 less than during the preceding year; the number of deaths due to tetanus was also less. Deaths as a result of heart disease and suicide were increased.

A New Hospital.—The United States Steel Corporation has decided to erect a hospital at Donora for the care of the injured mill workers. It will be maintained merely for emergency work. So soon as the patients are able they will be removed to their homes or to some hospital in Pittsburg. All modern appliances will be provided. The hospital will have a trained nurse, and a physician and a surgeon will be within easy reach.

To the Tropics.—Dr. McFarland, Professor of Pathology and Bacteriology at the Medico-Chirurgical College, Philadelphia, has left for Panama to attend the fourth meeting of the Pan-American Medical Congress. After the meeting he will go to Havana as a member of the American Public Health Congress, from which place he will visit Santiago to investigate the recently reported outbreak of yellow fever at that place. Neither Dr. McFarland nor Dr. Coplin, of the Jefferson Medical College, give credence to Dr. Nelson's view that the yellow fever germ lives or may live in the subsoil.

Cold Street Cars.—The Rapid Transit Company, of Philadelphia, is being taken to task with reference to this matter not only by the physicians but also the business men of the city. The Downtown Business Men's Association decided to send committees to all downtown organizations, secular, charitable and social, to ask them for their support in the health campaign. The physicians are calling the company's attention to the dangers to which the public is exposed by riding in their overcrowded, cold and dirty cars. A Harrisburg physician intimates that the officials of the Philadelphia Rapid Transit Company could learn much by studying the conditions of the street cars of Harrisburg.

Philadelphia County Medical Society.—At the last meeting W. W. Smithers, attorney, read a paper entitled, "Defects in Pennsylvania Food Legislation." During the course of which, he said, the pure food act of 1895 is a clear violation of the Constitution of 1874. Some of the definitions under the act of 1895 seem to aim at protection to health and others to prevent fraud from being practised upon purchasers, but every one of them can be used successfully not only to interfere with lawful commerce, but to subject citizens to punishment for acts which in no sense should be deemed crimes or even open to criticism. While the statute may be valid and even just as to some cases, in many it invades and impairs individual property rights, prevents the use of many desirable food preparations and needlessly interferes with trade. But the incongruities, imperfections and absurdities of the language of the law pale before the system for its enforcement. In concluding, Mr. Smithers advocated a new pure food law which would simply provide that every article sold should be guaranteed to be what is called for. Dr. H. W. Wiley, chief of the Bureau of the United States Department of Agriculture, read a paper upon "Food Preservatives and Food Adulteration." Dr. Thomas L. Coley read one upon "The Evaluation of Evidence as to the Pharmacological Action of Food Preservatives."

The Meeting of the American Association for the Advancement of Science.—Monday evening the American Physiological Society gave a smoker at the University Club. The American Society of Naturalist and Affiliated Societies gave one on Tuesday evening at the same place. The annual dinner of the American Society of Naturalists was held at Hotel Walton, Wednesday evening, on which occasion the President delivered his address. The retiring president of the American Association for the Advancement of Science, Hon. Carroll D. Wright, gave his address in the University Gymnasium at eight o'clock the same evening. Dr. Chapman entertained the American Physiological Society at luncheon on Wednesday, in his home, No. 2047 Walnut Street. A reception was given by Provost and Mrs. Harrison to the members of the American Association of Scientific Societies in the Free Museum of Science and Art on Wednesday evening. The smoker of the Psychological and Philosophical Association was given at the Colonnade Thursday evening. The Lady Members of the Committee on Reception and Entertainment gave a reception to the American Association and Scientific Societies, at the Acorn Club, Friday evening.

Cerebral Morphology.—Dr. E. A. Spitzka, of New York, in discussing brains, said that persons possessing great intellectual capacity and excelling in creative arts and in science are apt to have heavier brains than ordinary individuals. Criminals should have correspondingly light brains, but this is not always the case. The study of criminals by anthropological methods does not necessarily tend to establish a criminal type, nor does it tend to describe crime as equivalent to infantilism, epilepsy, atavism or anything else as maintained by the Lombroso school. Many criminals do not show a single anomaly in their physical or mental make-up, while many persons with marked evidences of morphological aberrations have never shown criminal tendencies. Dr. R. B. Bean, of Johns Hopkins University, spoke

of the negro's brain. His remarks were based principally upon the studies of 100 negro brains. He found that the anterior portion of the brain, the seat of will power, of esthetic and ethical feeling, of the negro much inferior to a corresponding portion of a white man's brain, therefore, he said, the negro by his physical conformation is prevented from being as strong of will and is less fine in his perception of right and wrong. The posterior portion of the brain, which is the seat of artistic sense and emotion, he found as well developed in the negro as in the white man.

Diet.—Before the section on Chemistry Dr. Wiley, of Washington, D. C., read two papers, one on "Diet in Tuberculosis" and the other on "Proper Diet for the Tropics." In the course of the first paper, he said, in many maladies whisky and brandy have apparently been used to great advantage and doubtless such is the case in tuberculosis. He further stated that alcohol, like a true oil, is readily and quickly absorbed and before it becomes oxidized into water and carbon dioxide produces gentle stimulation which seems to favor the general metabolic process. He inclines to give the patient what he likes to eat if the food stuff called for be nutritious, and does not deem it essential to force the patient to take what is positively distasteful to him. Dr. Wiley recommends fruit as the best food in the tropics.

Radium.—In a paper entitled "Future Development of Physical Chemistry," Dr. Wilder D. Bancroft said of radium that many people thought radium was to be the catalytic agent which would change all elements, but the recent work of Rutherford seems to have put an end to that idea.

The Ability of Bacteria to Ferment Sugars.—In his paper A. I. Rogers, Department of Agriculture, says the best test for this is accomplished by filling the cavity of a hanging drop slide with a sugar-free litmus bouillon to which a small amount of sugar is added. A cover glass is sealed over the solution. Fermentation is indicated by reddening of the litmus and the appearence of gas bubbles.

Germ-Proof Filter.—F. P. Gorham, of Brown University, calls attention to a filter which consists of a porcelain tube encased by a layer of aluminum hydroxide which is bound together by mineral wool. The effluent, he says, is of excellent quality chemically, is free from odor and is germ free after running continuously for one year. The flow is seven times as rapid as an uncoated filter at the start and twice as rapid after running continuously for fourteen days.

Bacteria Encountered in Suppurations.—D. H. Bergey, of University of Pennsylvania, notes that in pus bacteria are found which are not to be classed as the ordinary pyogenic organisms. In order to verify his opinion he examined the pus of 30 surgical cases and found, aside from the ordinary pyogenic organism, such as the *Bacillus pyocyaneus, Bacillus coli communis,* the streptococcus and the staphyloccocus, an organism belonging to the group of pseudodiphtheria bacillus and another belonging to the proteus group. These bacteria do not appear to him as being accidental contamination, but he is not yet able to state the extent to which they are capable of producing suppuration, as his work has not been completed.

Gelatin as a Substitute for Proteid in the Food.—Murlin found by experiment that when an amount of gelatin equivalent to one-quarter or one-half of the nitrogen necessary to maintain the nitrogenous equilibrium was given to an animal the percentage of sparing nitrogen was the same as when all meat was fed to the animal; if, however, two-thirds of the amount of nitrogen necessary was substitued by gelatin the percentage of sparing nitrogen was reduced. After the second period of fasting when one-half of the nitrogen necessary was substituted by gelatin the sparing nitrogen was 85 per cent., while, if two-thirds of the amount was substitued by gelatin, the sparing nitrogen was 100 per cent. or perfect equilibrium. Murlin obtained almost identical result when after fasting he substitued a certain amount of gelatin for an equal amount of proteid.

The Pharmacology of Ethyl Salicylate.—Dr. E. M. Houghton, of Detroit, says it is an irritant to the mucous menbrane and is a substance very similar to the methyl compound. The minimum fatal dose of ethyl salicylate is .0014 gm., while the methyl compound is just one-half or .0007 gm. When administered to an animal emesis soon occurs, due to the irritating action of the substance upon the mucous membrane of the stomach. It is eliminated by the kidneys in from five to ten minutes after intravenous injection; when taken by mouth it appears in the urine in from fifteen to forty-five minutes after administration and is completely eliminated in eighteen hours. The respirations in the first hour after administration are slowed, but later become increased; the pulse is increased and the temperature is at first raised but afterward falls. When ethyl salicylate is given to animals for some time continuously, they waste and finally die. Death is due to paralysis of the respiratory center.

Psychic Secretion.—W. Koch being deeply impressed with the work of Paltauf carried out a series of experiments in the same line. He succeeded in producing secretion in the stomach of dogs by showing food to them and this could be produced at irregular intervals. He also succeeded in producing gastric secretions when the dog's eyes were bandaged and the animal was allowed to smell the food only. Koch also found that those foods that were not palatable failed to produce the secretion either by smell or by sight. He closes his paper by stating that an animal must possess some acute power of perception in order to produce the secretions through psychic influences.

Tumor of the Fourth Ventricle with Cerebellar Symptoms.—Dr. F. P. Knowlton, of Syracuse, N. Y., presented the report of this condition observed in a cat. He called attention to the peculiar attitude of the animal; she seemed to dread to be lifted, although the dread could not have been due to pain, for she seemed to be totally void of such phenomena. The cutaneous sensibility for touch and pain were normal and hearing appeared to be unimpaired. There was present a tremor and nystagmus. The hind legs were widely separated; the occiput was drawn to the right and the body bent toward the left. At the autopsy he found the left half of the cerebellum depressed, the convolutions obliterated to a certain extent, the restiform bodies were bulging, and a tumor occupied the floor of the fourth ventricle. Upon microscopical examination it was discovered that the restiform bodies and a part of the cochlear nucleus were destroyed. The degenerations were due to pressure of the glioma.

The Presence of Soaps in the Organism.—Dr. O. Klotz, of Montreal, Canada, calls attention to the fact that if in such a disease as arteriosclerosis sections of the vessel are stained with sudan III many granules take the stain with a moderate degree of intensity but if silver nitrate be applied before the sudan III the granules assume a black tinge and there is evidence of

the pink hue of the sudan III. In calcified fibromyomata of the uterus the central zone is composed of calcareous substances while in the intermediate zone are many granules which assume the yellowish-pink due when sudan III is applied. In these areas he says there is fatty substance and calcium or soaps, which can be demonstrated in all areas of calcareous infiltration. To verify these observations he injected bichloride of mercury into a kidney in which cloudy swelling and later fatty changes occurred, so that when sudan III was applied to sections granules were found which had stained reddish-brown, and if silver nitrate was applied they were stained black. He succeeded in extracting soap from the tissue showing such changes. These soaps, he says, attract the calcium salts from the blood. In a mixture of albumin, potassium salts and carbonates he found granules which stained with sudan III like those already mentioned.

CHICAGO.

Officers of the Chicago Medical Examiners' Association.—At a meeting held December 19, the following officers were elected: President, Dr. Walter A. Jaquith; Vice-President, Dr. Liston H. Montgomery; Secretary, Dr. Morton Snow; Treasurer, Dr. U. J. Grim. Councilor of the Chicago Medical Society, Dr. Walter A. Jaquith.

State of Chicago's Health.—After three weeks of unusually low December mortality, the seasonal increase has set in sharply. The 548 deaths from all causes reported during the week represented a 7.6 per cent. increase over the previous week and nearly 4 per cent. more than the corresponding first winter week of 1903. In themselves none of the important causes of death shows any increase sufficient to create alarm; consumption only six more, cancer seven more, diphtheria three more, pneumonia nine more, smallpox four more, and whooping-cough three more than the previous week. But the revelations of the laboratory indicate a serious increase of atmospheric impurity, only temporarily checked by the snowfall. The germs of all the air-borne diseases are rife and the influenza bacillus or "grip" germ is endemically prevalent in many sections of the city. The department renews its warning against all unnecessary exposure to those suffering from any of the contagious and infectious diseases, and especially to pneumonia and influenza.

Dr. Wood Sentenced to Imprisonment.—Dr. N. News Wood, President of the Christian Hospital, and the medical institution itself were recently held in contempt of court for the violation of an injunction restraining them from using the name of Dr. John B. Murphy in connection with the hospital. The decision of the court, after the two days' hearing, was brief and very scathing. Judge Holdom, among other things, said that "judging from the record in this case, Dr. Wood is a dangerous man in the community. I am not free from the suspicion, and it is a grave one, that the manner in which Dr. Murphy's name appears upon these documents, being written there, is a forgery and a criminal offense. This must weigh in my decision and I shall fine the Christian Hospital $250, and fine Dr. Wood $100, and order him to the County Jail for ten days as punishment." Dr. Murphy's name appeared in the advertising of the hospital as a member of its staff, as previously stated in the columns of THE MEDICAL NEWS. His name was said to have been used in selling "certificates of membership" to medical students and young physicians throughout the country.

Memorial of the Iroquois Fire.—Chicago sat in sackcloth and ashes on the last day of the old year, the anniversary of its most fearful tragedy, and paid honor to the hundreds that perished one year before in the Iroquois Theater fire. Though time had assuaged the violence of grief, the memory of a common sorrow enshrouded the city, and the general heartache found expression in a memorial service at Willard Hall, where bereaved and survivors gathered to mourn the victims "lest we forget." At the cemeteries friends and relatives visited the graves of the 575 victims and strewed the tombs with wreaths and flowers. In some extremely pathetic cases one survivor placed the offering on a long row of graves containing all the other members of a family circle. As a prelude to the services, the Iroquois Memorial Association held a business meeting at which President J. J. Reynolds submitted a report on the progress of the emergency hospital plan. Within sixty days it is expected that $50,000 will be raised as a nucleus for a building fund, which will be placed in the hands of fifteen trustees. Officers for the ensuing year were elected as follows: Honorary President, R. T. Crane, Jr.; President, D. R. Martin; First Vice-President, C. M. Bickford; Second Vice-President, J. P. Hoyland; Treasurer, Phelps B. Hoyt.

Physicians Responsible for Victims of Morphine Habit.—Superintendent Sloane of the Bridewell says that prisoners unanimously claim that they fall into the morphine and other habits after being excessively doped by physicians. After hearing confessions from 970 "dope fiends," the Superintendent says in his annual report that the alarming increase of slaves to drugs among the prisoners of that institution this year is due to a careless and too liberal use of the deadly stuff by physicians. Leading medical men of this city were not a little indignant when the contents of the report and the prisoners' alleged confessions were read to them. Several physicians were interviewed regarding the subject, and among them Dr. G. Frank Lydston, who said that he failed to understand how the Superintendent of a prison, a man who is supposed to have some insight into human nature, can swallow the silly excuses of the unfortunates in his care. No drug fiend is a criterion on any important matter. Increase in the number of victims should not be laid at the door of the medical profession, says Dr. Lydston. The report of Superintendent Sloane further states: "The many cocaine, morphine, opium, paregoric, codeine, phenacetin and other victims thronged the cells everywhere. Many were women, and they almost unanimously blamed their physicians for getting them into the habit. They fell through despondency and bad associations."

GENERAL.

Cossacks Surround Plague District.—The plague district in the Ural region has been cordoned by cossacks and the disease has been localized. The mortality has slightly decreased.

Gift to Syracuse Hospital.—The Syracuse Hospital of the Good Shepherd is the recipient of a New Year's gift of $50,000, the donor being William B. Cogswell, general manager of the Solway Process Company of that city.

Big Donation to King's Hospital Fund.—Baron Mountstephen, president of the St. Paul and Manitoba Railway, has donated £200,000 in Argentine bonds, producing £11,000 yearly, to the King's Hospital fund.

Sanatorium Afire.—The New England Sanatorium, formerly the Langwood Hotel, situated on the shore of Spot Pond, two miles from the village of Stoneham, Mass., was burning at an early hour Christmas day, and it was feared would be a total loss. So far as

known no lives were lost, but there was a panic among the patients.

Pan-American Medical Congress Opens.—The Pan-American Medical Congress opened its session at the theater in the City of Panama last Tuesday. Sanitary Officer Gorgas and Chief Engineer Wallace delivered addresses. President Amador received the delegates this afternoon.

Massage As An Employment for the Blind.—In Japan the blind have a practical monopoly over massage. There massage is cheap and within the means of all classes. The blind, protected by the government, are self-supporting, and contented with their lot. This condition has existed for centuries. In four countries—Russia, Belgium, England, and Germany—there have been well-organized and successful attempts to teach selected blind people massage. Here in America the only definite series of attempt in this direction were made by Mr. Allen.

Medical Society of the Missouri Valley.—In response to a cordial invitation from the Jackson County Medical Society, the semi-annual meeting of this association will be held in Kansa City, Thursday, March 23, 1905. Those desirous of presenting papers should send their titles to the secretary not later than the first of February. Papers will appear upon the programme in the order in which they are received. An invitation has been extended to the presidents of the State associations within the territory embraced by the Missouri Valley and to the profession in general, and an interesting and profitable meeting is expected.

The National Association for the Study and Prevention of Tuberculosis.—The first annual meeting of The National Association will be held in Washington, D. C., at the New Willard Hotel, on Thursday and Friday, May 18 and 19, 1905. There will be general sessions, and division of the work into the following three sections: 1. *Sociological*, of which Mr. Homer Folks is the chairman, and the secretary Miss Lilian Brandt, United Charities Building, 105 East Twenty-second Street, New York. 2. *Pathological and Bacteriological*, of which Dr. Mazyck P. Ravenel is chairman. The secretary is Dr. D. J. McCarthy, Phipps Institute, Philadelphia, Pa. 3. *Clinical and Climatological*, of which Dr. Norman Bridge is chairman and Dr. S. G. Bonney is secretary, Stedman Building, Denver, Colo.

Institute for the Study of Blood Infection.—Before the meeting of the American Association for the Advancement of Science, held last week in Philadelphia, Dr. P. A. Maignen, of that city, said: "From a careful study I have become convinced that it is of paramount importance to the public health that an institute be founded in this country for the special study of blood poison, particularly as regards the first step of infection. A sterilizing agent should be discovered which would be applicable in every case, and the dressing of wounds should be thoroughly gone into. We know practically nothing of the immediate phenomena which appear at the beginning of the disease. There are eighteen known ways of infection, which constitute a very large programme for study."

Brains Bequeath to Science.—Brain anatomists throughout the United States have begun a movement which they hope will bring about a condition of affairs more favorable to the study of that most wonderful organ of the human body. It is for the formation of a society, modeled on the plan of the Mutual Autopsy Society of Paris, the members of which after their death contribute their brains and other organs to science. A committee, consisting of Dr. Alexander Hrdlicka, Dr. E. A. Spitzka and Professor B. G. Wilder, three of the best known brain experts and anatomists in this country, has been appointed for the purpose of preparing a general form of brain bequest, which will hold in law and not to be rendered null by any action that may be taken by relatives of the person making the bequest.

Rabies on the Increase.—Rabies has been more prevalent in New York during the past year than ever before, according to the State Department of Agriculture. The annual report says: "Action has been taken promptly upon notice or information reaching this office that the disease existed. Notices have been issued in each geographical district where the disease existed, as required by statute, and such surveillance has been given as could be with the men and means at command. It is believed that the disease in these localities has been practically suppressed. This belief is based upon the fact that there has been no manifestation of the disease since enforcement of the quarantine, except in one instance in the town of Halfmoon; in this case the dog was immediately killed. Rabies has been found in the following counties: Sullivan, Ulster, Saratoga, Broome, Tioga, Tompkins, and Chautauqua.

Health in the Navy.—The annual report of the surgeon general of the navy for 1903 contains some interesting statistical material. The average strength of the active list was 37,248. There were 28,569 admissions to the sick list; that is, of every 1,000 men 782 were at some time during the year incapacitated by disease or injury. The admissions for injuries, 4,024, were less, and those for disease greater than during 1902. The total number of sick days, 470,496, was equivalent to 12.88 days for every man in the navy and marine corps. The deaths during the year numbered 224, 164 of which were from disease. Of the total number of sick days 114,571 were caused by venereal disease, which shows a marked increase over 1902. One of the recommendations made by the surgeon-general is that a corps of skilled dentists be added to the medical service. This has recently been done in the British army, where "military" dentists are now stationed at the largest barracks.

Yellow Fever.—During the past week there has been an unconfirmed report that six cases of yellow fever have been found in the canal zone at Panama. The news has caused some surprise but no alarm, because it had been expected that there would be a recrudescence of the disease there until the sanitary measures which are being adopted by the commission, under the supervision of Dr. Gorgas, can be carried out. In the Public Health Report, issued by Surgeon-General Walter Wyman, on December 30, 1904, is a report of the yellow fever situation at Guayaquil, Ecuador, which discloses two deaths from the scourge. The steamship Limari, bound from Panama to Valparaiso, stopped at Guayaquil with a case of yellow fever on board. The patient had been in Colon before boarding the ship. There has been constant communication between Panama and Guayaquil, at which place yellow fever always exists, but in the present instance the fever went from the isthmus to Ecuador, instead of the reverse. At Santiago de Cuba one undoubted case and one suspicious case occurred during the latter part of last October. Neither patient succumbed and no evidence that infection is lurking in this ancient stronghold of yellow fever could be detected by Dr. Nelson, whom the New York *Herald* commissioned to report on Cuban sanitation.

The Sale of Poison.—The *Globe* recently printed an interesting editorial under the above caption which is given below without comment: "Recently the Illinois Board of Pharmacy sent out 139 prescriptions to Chicago druggists to be filled. Analysis showed that twenty-three of the bottles contained no trace of the drug called for, sixty-six were 80 per cent. impure, ten were 20 per cent. impure, and only thirty-one were pure. The revelations in the New York bogus pill case, not to speak of the slaughter in one part of the city by wood alcohol whiskey, show that Chicago has no monpoly of the adulterators and poisoners. There are bogus drugs in our prescriptions, aniline dyes in our jellies, sulphuric acid in our wines, sulphate of lead in our mustard, copperas in our olives and canned vegetables, and oxide of iron in our chocolate. Yet it seems probable that the coin-clutchers who thus play havoc with health will succeed in preventing the enactment of the protective legislation that the researches of Dr. Wiley of the National Bureau of Chemistry have shown to be necessary. It is a remarkable commentary on the boasted intelligence of the American people that they permit themselves not only to be defrauded but in many cases to be poisoned. It can no longer be said that there has not been sufficient exposure, or that it is impossible to provide a remedy.

The Hook-Worm in Porto Rico.—Mayor L. L. Seaman, M.D., who has recently visited the island in the interest of the New York *Herald*, reports a most serious state of health among the inhabitants the true nature of which has only lately been understood. He says, "the dreadfully anemic condition of the rural population of the island, embracing as it does nine-tenths of its inhabitants, has long been a matter of common knowledge. It has been accepted as a necessary evil, being attributed to poverty and poor food, and no special measures were taken for its prevention and cure until it forced itself upon the attention of medical men after the hurricane in August, 1899. Then an unusually large number of people came under medical and surgical treatment, and the astounding fact revealed itself that no less than eighty per cent. of the white victims suffered from this illness, thought to be pernicious anemia. The great prevalence of the disease excited much discussion among the attending physicians, for, they argued, if anemia is the consequence of insufficient food practically all Porto Rico must be on the verge of starvation, which, as a matter of fact, they knew was not the case. Hence they concluded that the disease was not anemia from deficient nourishment, and this conclusion has now been verified and the real exciting cause has been discovered. Captain Bailey K. Ashford, who was in charge of the field hospital established after the hurricane for the relief of the suffering poor, learned through biological and microscopical examinations that practically all sufferers from "anemia" were infested with a parasite, a so-called hookworm or nematode, which is known to the scientific world as *Anchylostoma duodenale*. On the authority of Dr. C. W. Stiles, zoologist of the Public Health and Marine Hospital Service there is a slight difference between the Porto Rican variety and the above species known in the Old World and which has been christened "*Uncinaria Americana*." But the parasite is a bloodsucker all the same—that is, if the majority of the authorities on the subject can be believed. On February 16, 1904, the bill providing for the appointment of a commission "for the study and cure of the disease known as 'tropical anemia' in Porto Rico" was approved. Even then it was supposed that the anemic conditions confronting the commission constituted the disease instead of being the result of a totally different trouble, the nefarious effects of that silent but terribly efficacious bloodsucker, *Uncinaria Americana*.

The obstinate official adhesion to the theory of malnutrition, coupled with the unquestionable poverty of the Porto Rican land toiler, gave rise to that story of starvation which recently made the rounds of the American press. As a matter of fact, there is no starvation in Porto Rico.

The report is headed "Uncinaria in Porto Rico—Report of Commission on Anemia," and gives expression to the following: "About ninety per cent. of the rural population in all parts of the island are infected. If remedies are not taken the disease will continue to reduce the white and mixed inhabitants forming a country class in the island to a lower and lower grade, mentally, morally and physically, until the very existence of the class will be threatened. The inhabitants of Porto Rico belong to the poorer classes and seventy-five per cent. are agriculturists. Unicinariasis is a disease of the poor; the poorer the man the more exposed is he to infection. Here, again, poverty alone is a considerable cause of 'anemia,' whereas it is really a predisposing element. This is the reason why, when a gibaro (countryman) comes to a town where infection is not possible, or at least rare, he often gradually gets better of his 'anemia,' his multiple reinfections cease and the parasites he brings with him die as they reach the limit of their natural existence. Persons treated in Utuardo (excluding our special case), not more than three hundred of whom were ever rationed even for a short time by the commission, living in their homes as they had always lived, extremely poor and generally with an illy balanced, often an insufficient, dietary, were radically cured, expelling their uncinaria and leaving the clinic with normal blood tested by instruments. It is the imperative duty of the insular government to take hold of this work with decision and energy. The government should cooperate with the municipalities to fight the disease."

The therapeutic measures which experience has indicated are summarized by Dr. Seaman. The drugs first recommended were male fern and thymol, with a distinct preference of the latter. More recently beta-naphthol has been administered, which the former advocates of thymol state is not only more efficacious, but less irritating and less expensive. The statistics do not give a clear picture of the efficacy of the treatment, inasmuch as in the grand total of 5,490 treated cases, 1,029, or eighteen per cent. are included which did not return and the results of which were not recorded. As it is, however, eighty per cent. have been cured or improved, and if it is assumed that the majority of the eighteen per cent. above mentioned did not return on account of their improved condition the percentage of successes would come very near the hundred mark. As a matter of fact, in less than three per cent. of the total number of cases no improvement occurred or death supervened. But effective treatment of the infected alone will not save the situation. It is the preventive measures to which we have to look for an eradication of the disease. Of course, it is patent even to the layman that if arrangements could be made for preventing the infection of the soil, and practically enforced, the disease would be completely stamped out in a short time, and the bugbear of Porto Rican economist, "anemia," would soon be relegated to the annals of history, as uncinariasis is pre-eminently a filth disease and the general use of latrines would lead to its complete eradication.

SPECIAL ARTICLE.

BYWAYS OF MEDICAL LITERATURE.—XXIII.

THE AMERICAN DOCTOR—AS A CHINAMAN SAW HIM.[1]

"At a dinner in Manchester in the summer I had as my *vis-à-vis* a delightful young American, who, among other things, said to me: 'It is astonishing to me that so many of your people live long, considering the ignorance of your doctors. I assured her that this was merely her point of view, and that we were well satisfied with our doctors or physicians. I wished to retaliate by telling my fair companion a story I had heard the day previous. An American physician operated on a man and removed what he called a 'cyst,' which he displayed with some pride to a doctor of another school. 'Why, man,' said the latter, 'that isn't a cyst; it's the man's kidney!'

"The Americans have made rapid advances in medicine and surgery and they have some extraordinary physicians. From two to four years of study completes the education of some of the doctors, and hundreds are turned out every year. Some are of the old and regular school of medicine, but others are called homeopathic, which means that they give small doses of the more powerful medicines. Then there are those who practice in both schools. Indeed, in no other field does ignorance, superstition, credulity and lack of real education display itself as among the American doctors and healers. I believe I could fill a volume by a mere enumeration of the diabolical and absurd nostrums offered by knaves to heal men who profess to hold in ridicule the Chinese doctors. I mention but a few, and when I tell you, as a truth beyond cavil, that the most extraordinary of these healers, the most impossible, have the largest following, you can see what I mean by the credulity of the people as a whole. Christian Science doctors have a following of tens of thousands. They combine so-called science with religion; leave their God to cure them at long or short range, through the medium of so-called agents. The head of this faction is an ignorant but clever woman, who has turned the heads of perhaps thirty-three and a third per cent. of the American women whom she has come in contact with.

"Then come the faith curists, who rely upon faith alone. You simply are to *think* you will get well. Of course, many die from neglect. As an illustration of the credulity of the average American, a Christian Science healer was once treating a sick woman from a distant town, and finally the patient died. When the bill was presented the husband said, 'You have charged for treatment two weeks after my wife died.' It was a fact that the healer had been treating the woman after she was buried, the husband having failed to give notice of the death. One would have expected the 'healer' to be thrown into confusion, but far from it; she merely replied, 'I thought I noticed a vacancy.'

"Next come the musical curists who listen to thrills of sound, a big organ being the doctor. Then there is the psychometric doctor who cures by spirits. The spirit doctor cures in the same way. The palmist professes to point out how to avoid the ills of life. Magnetic healers have hundreds of victims in every city. The advertisements in the journals of all sorts are of countless kinds. Some cure at short hand, some miles distant from the patient. They are equaled in number by the hypnotists or hypnotic doctors, who profess to throw their patients into a trance and cure them by suggestion. I heard of one cure in which the guileless American is made to lie in an open grave; this is called the 'return to nature.' Again, patients are cured by being buried in hot mud or hot sand. I have seen a salt-water cure where patients were made to remain in the ocean ten hours a day. The plain water cure has thousands of followers with hospitals and infirmaries, where the patient is bathed, soaked, filled, washed and plunged in water and charged a high amount.

"Then there is the vegetarian cure, no meat being eaten; and there are the meat eaters who use no vegetables. There are over fifty thousand *masseurs* and osteopaths in the country, who cure by baths and rubbing. You may have a bath of milk, water, electricity or alcohol, or a bath of any description under the sun, which is guaranteed to cure any and all ailments. Perhaps the most extraordinary curists are the color doctors. They have rooms filled with blue and other colors, in whose rays the patient victim, or the victim patient sits, 'like Patience on a monument.' I could not begin to give you an enumeration of the various kinds of electric cures; they are legion. But the most amazing class comprised the patent medicine men, who are usually not doctors at all, but buy from someone a 'cure' and then advertise it, spending in one instance which I investigated one million dollars a year. Every advantageous wall, stone or cliff in America will be posted. You see the name at every turn, and the gullible Americans bite, chew and swallow.

"It is not overstating facts when I say that three-fifths of the people buy some of these patent nostrums, which the real, medical men denounce, showing that the masses of the people are densely ignorant, the victim of any faker who can shout his wares loud enough. In China such a thing would be impossible; the block would stop the practice; but my dear ——, the Americans assure me that China is a thousand years behind the times, for which let us be devoutly thankful.

"I have not enumerated a tenth of the kinds of doctors who prey upon these unfortunate people. There are companies of them who guarantee to cure anything, and skilfully mulct the sick of their last penny. There are retreats for the unfortunate, farms for deserted infants, and homes for unfortunate women carried on by villains of both sexes. There are traveling doctors who go from town to town, who cure 'while you wait,' and give a circus while talking and selling their cures; and in nine cases out of ten the nostrum is an alcoholic drink disguised.

"In no land under the sun are there so many ignorant, blatant fakers preying on the people, and in no land do you find so credulous a throng as in America, yet claiming to represent the cream of the intelligence of the world; they are so easily led that the most impossible person, if he be a good talker, can go abroad and by the use of money and audacity secure a following to drink his salt water, paying a dollar a bottle for it and singing his praises. Such a doctor can secure the names and pictures of judges, governors and States, senators, congressmen, prominent men and women, officers of the volunteer army, artists, actors, singers,—in fact prominent people of all kinds will provide their pictures and give testimonials which are blazonly published. These same people go to a Chinese drug shop and laugh at the 'heathen' drugs, and wonder why the Chinaman is alive. America has a body of physicians and surgeons who are a credit to the world, modest, conscientious, and with a high sense of honor, but they are as a dragon's tooth in a multitude to the so-called 'quacks' who take the money of the masses and prey

[1] By the courtesy of D. Appleton & Co., N. Y., publishers of "As a Chinaman Saw Us." This is a reproduction of one of the chapters.

upon them, protected in many cases by law. No one profession demonstrates the abject credulity of the great mass of Americans as that of medicine.

"One other incident may further illustrate the jokes which these so-called doctors play upon the common people. In a country town was a 'quack' doctor who professed to be a 'head examiner,' giving people charts according to their 'bumps,' a fad which has many followers. 'This, ladies and gentlemen,' said the lecturer, holding out a small skull, 'is the skull of Alexander the Great at the age of six. Note the prominent brow. This (holding up a larger skull) is the same at the age of ten. This (holding up another) at the age of twenty-one; (then stepping to the front of the stage) this is the *complete* skull of Alexander at the time of his death.' All of which appeared to be accepted in good faith.

"Of the best physicians in America one cannot say enough in praise. I was most impressed with their high sense of honor. They have an agreement which they call their 'ethics' by which they will not advertise or call attention to their learning. Consequently the lower and ignorant classes are caught by the blatant chaff of the patent-medicine venders and the 'quack' doctors. What the word 'quack' means in this sense I do not quite know; literally it means the cry of a goose. The 'regular doctor' will not take advantage of any medicine he may discover or any instrument; all belongs to humanity, and one doctor becomes famous over another by his success in keeping people from dying. The grateful patient saved tells his friends, and so the doctor becomes known. In all America I never heard of a doctor that acted on the principle which holds among our doctors, that the best way to cure is to watch the patient and keep him well, or prevent him from being taken sick. The Americans in their conceit, consider Chinese doctors ignorant fakers; yet, so far as I could learn the death rate among the Chinese, city for city, country for country, is less than among Americans. The Chinese women are longer lived and less subject to disease. In what is known as New England, the oldest well-populated section of the country, people would die out were it not for the constant accession of immigrants. On the other hand, the Chinese constantly increase, despite a policy of non-intercourse with foreigners. The Americans have, in a civilization dating back to 1492, already begun to show signs of decadence, and are only saved by constant immigration. China has a civilization of thousands of years, and is increasing in population every day, yet her doctors and their methods are ridiculed by the Americans. The people have many sayings here, one of which is, 'The proof of the pudding lies in the eating.' It seems applicable to this case."

MODERN SPIRITUALISM AS IT IS.

Spiritualistic séances have so often been enlivened by skeptics who seized "materialized" visitors claiming to be from another world, that accounts as to just what world it was to which the visitors turned out to belong, long ago lost even the value of confirmatory evidence, and it has been known for years that anybody who wanted the excitement of catching a flesh-and-blood spook could not possibly go wrong in selecting his hunting ground, no matter where he went among the places devoted to the materializing industry. New interest has been added to this old sport, however, by a variant of it just developed in Brooklyn, writes the *Times*. There, it seems, the business of "raising" Indian chiefs and big and little maidens of assorted kinds has been so vigorously followed, that bitter jealousies have grown up among the "mediums," and they are engaged in the work, admirable in some ways, but a bit treacherous in others, of proving each other to be humbugs. The first reported effort in this novel campaign was a complete success. The three "investigators" posed convincingly as—well, as believers, and to them trustingly appeared as fine a specimen of the Indian ghost as any reasonable collector could demand. The three seized "Fallen Water," and immediately several other things and persons fell in a general scrimmage the very reverse of spiritual. Suits for assault and battery have now been instituted, and the situation is most promising of joy. Exactly what there is in it for people themselves in the ghost trade is not easily seen. Such internal warfare threatens the very existence of their industry, for even to Brooklyn's credulity there are limitations, and "exposures" planned and carried through by "mediums" will be sure to have a deplorably retroactive effect. What these enterprising folks should do is to combine, to form a trust. Then only will they be able to charge monopoly prices for ghosts while paying competitive prices to their workmen. Involved in this amusing episode, however, is one very serious feature. In the house where "Fallen Water" did his turn the so-called spirit of a little child often floated airily out of the cabinet. Now, can anybody conceive of more harmful surroundings for a child than these or use of a child more deeply reprehensible? Speaking on this general topic of Spiritualism, Dr. I. K. Funk, of New York, has some interesting experiences. He writes (*Literary Digest*, October 8, 1904) that the subject is one that belongs to the "sphere of influence" of the clergy, and he urges upon ministers the duty of fitting themselves to take the leadership in this new series of investigations. With a view to clearing the ground for intelligent research, Dr. Funk has himself made extensive inquiries into the nature of spiritualistic phenomena, the results of which he has embodied in book-form. In *The Homiletic Review* (October) he recounts a "unique experience" of his brother, Mr. B. F. Funk, in contact with the seamy side of Spiritualism. It seems that a business card bearing the words "Radium, Medium's Paraphernalia," and advertising "crowns, belts, hands, heads, veils and full-size figures illuminated with the new radium light" which would "appear, gradually float about room and disappear," recently came into Dr. Funk's possession. The card carried a Chicago address, and it was handed by him to Mr. B. F. Funk with the request that he investigate and report the facts of the case. This report is now incorporated in Dr. Funk's article, and opens as follows:

"On my first call I was informed that in order to see this radium expert it would be necessary for me to make an appointment. The appointment being duly made and kept, I found the proprietor to be a youngish, gentlemanly sort of fellow, apparently refined and educated. The card served as an open sesame, somewhat stiff, gaining for me the desired interview. In reply to my question whether he sold outfits for mediums, he said, eyeing me closely: 'I sometimes sell things that are of interest to mediums and—to other people.' After a moment's silence he continued: 'What do you wish? What are you *after*?'

"Then followed much verbal fencing, when he finally said: 'I always insist, as a mark of good faith, that at the outset an order be given with payment for an outfit.' This outfit, he told me, varies in price from $50 to $1,000."

Mr. Funk went on to say that a lady friend in an Eastern city wished to equip herself as a Spiritualistic

medium. "I do not wish her to do wrong," he concluded. To this the young man replied:

"'Certainly not, certainly not; I understand. I have many such among my clientele. It is my business to help mediums make a good show. They do not do wrong; on the contrary, they are doing a great deal of good in getting people to believe that their friends who have died are really alive. I have seen mothers made happy at the sight of their dead children, husbands at the sight of their departed wives. It has often brought tears to my eyes to see the simple faith of these people. If a man is a philanthropist who can multiply blades of grass, surely I or a medium should be entitled to praise if we cause rejoicing where there are tears. Why, my dear fellow, Spiritualists are the happiest people in the world. Why undeceive them? They are in heaven. It does them no hurt, but much good to believe these things. My business is to put clever people in the way of making the world happier.' The man grew quite eloquent in dilating on his philanthropic calling."

The report of the conversation continues: "He finally asked: 'What kind of phenomena would you prefer that your friend should produce?'

"I replied: 'I wish her to give physical manifestations, such as materialization of hands, of the entire human form, spirit voices, illuminated stars, sparks, rays of light, floating balls of fire, floating musical instruments, trumpet talks, slate-writing, mind-reading, etc. Are these things within the scope of your art?'"

"He smiled at the modesty of my wish, then said: 'All this is merest child's play, provided your lady friend is apt, quick-witted, and has nerve. I am furnishing help after this sort to the mediums of Chicago—they all come to me; I know them all.'

"'Do good, genuine mediums use this kind of help?'

"'All mediums are *good* mediums and genuine mediums. I don't know any other kind.'

"'Is there no difficulty in manipulating this machinery or paraphernalia?'

"'It is so simple you will wonder why it is that people do not at once detect it. When you understand it, and understand the *modus operandi* of handling it, you will be much amused.'

"'How about slate-writing?'

"'Perfectly simple.'

"'With the tied slates, glued and sealed?'

"'Yes, oh yes. I have laughed until my sides ached after a séance at the remembrance of how easily and completely the d. e.'s ('dead easies') were fooled. To see a doting father take the materialized form of his dead child on his knee and pet it and kiss it, and then hear the little one say, "Now, papa, I must go; I feel I am getting weak," and then see the child slip from his lap and disappear, to the infinite surprise of all the faithful—it is more laughable than an Artemus Ward "wax-figger show."'

"'But is there no danger of getting caught?'

"'No, there are two hundred mediums in Chicago. How seldom you hear of an exposure.'

"'But I have been where I was permitted to touch the hand of a form. It seemed warm, as if flesh and blood.'

"This seemed to amuse him greatly. Finally he said: 'Yes *it does feel precisely like flesh.* But this is another phase of the business. It is all explained when the outfit is sent.' . . . . .

"After some more interchange of this kind of talk I said: 'Speaking seriously, do you mean to tell me that no mediums possess occult or abnormal powers; that it is all humbuggery and trickery?'

"After a few moments' thought, his face growing serious, he said: 'There *is* something mysterious, something that puzzles me at times about some mediums. I have seen phenomena that I cannot explain. At times an outside influence seems to come over the medium, taking possession of her. What it is I don't know. Possibly telepathy will explain it, possibly spirits.'"

In his comment on this report, Dr. Funk admits "the abundance and the disgusting nature of the frauds which attend many spiritualistic séances," as well as the dangers that attend this line of investigation. He adds: "I have seen psychic cobwebs—if cobwebs they be—tangle the feet of even intellectual giants; and the shrewdest experts—to change the simile—need to sail these mystic seas with sharp eyes and level heads, for these seas are almost wholly uncharted, and in sailing over them, at times, the ship's compasses exhibit inexplicable variations. Yet these investigations must be made and these seas must be sailed and charted." The criminologists, be it interpolated, have been charting these seas for decades, but the clergy rarely ever meet the true criminal, and more rarely understand how much akin he is to the rest of mankind.

SOCIETY PROCEEDINGS.

NEW YORK STATE MEDICAL ASSOCIATION, NEW YORK COUNTY BRANCH.

Regular Monthly Meeting, held November 21, 1904.

The President, Francis T. Quinlan, M.D., in the Chair.

Dangers of the X-Ray.—The first part of the scientific business of the evening consisted of a paper by Dr. Milton Franklin on the dangers commonly met with in the employment of the X-rays for diagnostic and especially for therapeutic purposes. Dr. Franklin said that while the most important and serious danger is that of localized burns, there is a certain amount of risk of producing general depression with even a tendency to cachexia when patients are exposed frequently and for prolonged periods to the influence of the X-rays. This is only what might be expected considering the influence that such radiations have upon living tissues. It emphasizes for care in the use of the X-rays and for experience in the operator, so that such unfortunate sequelæ may not result.

Protectors.—Dr. Franklin suggested that parts which are unaffected should not be subjected to the influence of the X-rays. Consequently the need of having metallic protectors usually made of sheets of lead, so that only such parts as are desired may be submitted to the influence of the X-rays. When the seance is at all prolonged, slight movement of the patient is likely to cause the rays to act upon portions sometimes at quite a distance from the lesion to be treated. Sheets of lead may be arranged, however, in such a way that only the lesion itself will be exposed. The neglect of this precaution has probably done more to bring the X-rays into disrepute than almost any other feature of their employment. Dr. Franklin considers that one of the most crying needs at the present time is for a radiometer, that is an instrument that will measure the radiation strength of the rays. Tubes are sure to differ, not

only among themselves, but also from time to time and it is important for the operator to know exactly what radiation strength he is employing. Dr. Franklin has made use of the principles employed in the discovery of radium to construct a radiometer which tells exactly the strength of the X-rays employed at any given moment. Repeated trials have shown him that this instrument, which is construtced on the principle of ionizing effects of the X-ray, can be absolutely depended on. It is sufficiently simple to be employed by any one at all familiar with electrical measurements, and does not itself vary from day to day.

Forms of Danger.—Dr. William B. Coley, in opening the discussion, said that in the use of the X-rays there is danger first to the patient, next to the operator and then, finally, to the public mind. With regard to the patient, the most serious danger is that of burns. With experience the risk of this decreases, but never entirely. On the other hand, the inexpert frequently meet with this complication. The use of too strong radiations may produce a breaking down of cancer tissue with rapid dissemination of the material and generalized malignant disease. At first this was mere theory. Now it is certain and is attested by the experience of many. Dr. Coley has seen a lymphosarcoma, which usually does not give generalization, breaks down under the effect of the X-rays and disappears to a great extent, but shortly afterward tumors appear in the mesentery and elsewhere throughout the body. Mammary carcinoma may be made in this way to spread to the spinal cord, to the pleura or to other inaccessible portions of the body, with a rapidly fatal result. Dermatitis frequently occurs in those who use the X-rays much and is rather expected. Not infrequently, however, ulcers are seen and these are of a very intractible type. The most curious feature about them is that they seem to have a special tendency to malignant degeneration. There has been much seeking after an agent that would produce cancer. The X-rays were looked upon as likely to cure malignant disease. In a certain number of reported cases, however, they have actually produced cancer. Dr. Coley himself has seen four cases. A very interesting feature of most of these cases is that there is a multiplicity of the malignant lesions. In one case, after the amputation of a hand, the other hand had to be amputated and then the arm on the opposite side and then eight further operations, though the end is not yet and the fatal issue is looked for. Too much stress cannot be laid on these unfortunate results, for the profession is evidently dealing with an agent whose power is very little known and with regard to which it is extremely difficult to take proper precaution.

Danger to the Public Mind.—This consists mainly of the danger that because of the flattering reports only too often published, patients insist on being treated with the X-rays when the knife is the only proper treatment. Small nodules of carcinoma may be treated by the X-rays and apparently be cured, while lymphatic involvement is gradually producing other foci of the disease that may prove to be incurable. The X-rays therefore should only be employed in cases that are inoperable by the knife or after operation to prevent recurrence, or for the treatment of recurrent nodules. In this latter regard the X-rays are especially valuable.

No Protector.—Dr. Carl Beck said that whenever there is a question of malignant disease, the X-rays should be employed without any protection for the surrounding tissues. The old idea used to be that cancer was limited and that consequently only the nodule itself needed to be excised. Under such conditions of surgical procedure, recurrences were almost inevitable. It is important that the surrounding tissues, which are always infiltrated with cancer cells, should be subjected to the influence of the curative agent quite as well as the tumor itself. If the X-rays are employed for cosmetic purposes, for the removal of hair or some cutaneous blemish, then a protector is advisable, but never in cancer cases.

Deep Burn, Relief of Deep Carcinoma.—Dr. C. W. Allen presented a case that had been sent to him to be treated by the X-rays with the diagnosis "liver carcinoma." Because of that diagnosis, a number of treatments were given, until unfortunately a deep burn was produced. This was several years ago and before the proper limitation of the effects of the X-rays were so well known. Owing to the cachexia of the carcinomatous condition, the woman was in very poor health and it looked as though a fatal issue was not far off. The burn proved extremely difficult to heal. At the end of two years the patient returned ever so much better. Now it would seem as though her hepatic cancer had been delayed in its progress so materially that she may look forward to even years of reasonably comfortable life. Almost any one would be satisfied to stand a burning that has been experienced in this case with its subsequent discomfort for the sake of the improvement against all expectation which has resulted.

Experience with X-rays.—Dr. Morton said that any agent may become dangerous if inexpertly employed. He does not consider that the electroscope would prove of great service in the measurement of radiation. Hence, the necessity for experience rather than mechanical aid as a guide as to the way the X-rays should be employed. Dr. Morton considers that as the X-rays are useful after operation, so they should also be employed before operation. In this way the cancer will be better limited and certainly if at any time there is to be delay in the use of the knife, then it would be almost criminal to neglect the use of the X-ray.

Dr. Franklin, in closing the discussion, said that there is an idiosyncrasy to the X-rays, but this is no more important than the idiosyncrasy for other remedial measures. Special directions are not given for the employment of drugs so as to avoid the inconvenience that always results from the presence of an idiosyncrasy because it is impossible to anticipate these. The same thing must hold good with regard to the X-rays. Rules must be made without reference to such idiosyncrasy. With regard to the use of metallic masks and screens, Dr. Franklin wishes to emphasize the fact that he suggests the covering only of the area that is not to be treated. This does not mean that only the microscopical lesion is to be the subject of treatment, but also as much of an area around it as may be deemed advisable by the operator. All skin outside of this area, however, should be protected.

The Russo-Japanese War.—Dr. L. L. Seaman read a report of his personal observations on the medical and surgical treatment of the Russo-Japanese war. In the very hospitals that he visited, he realized that the Japanese had secured fresh air and sunshine to a greater degree for their hospitals than had ever been accomplished before. The toilet arrangements, owing to the fact that earth closets are employed, might be the subject of criticism, but the exquisite cleanliness of the people themselves

more than made up for any drawbacks in this matter. After the cleanliness, the order that reigned was the most noteworthy feature. The mechanical precision of hospital reception of large numbers of patients was a never-ending source of wonder. Within an hour or two after the reception of hundreds of patients, the routine of the hospital was proceeding as if there had been no such call upon its resources.

No Surgery at Front.—The rule among the Japanese has been that no surgery of any importance is done at the front. In cases of serious hemorrhage, it is of course checked by whatever surgical needs are necessary. Anything else that is necessary to save life is also done by the field surgeon. As a rule, however, first aid bandages are applied and then the wounded are sent back to Japan. On their reception at the hospitals, there is as a rule very little to do. The mortality on the way is not large. Most of the patients' wounds have healed by first intention before their arrival and the only thing necessary is to make their convalescence as rapid and complete as possible, for they are all anxious to get back to the front. In the cases seen of soldiers who had shared in the attack on Port Arthur, the explosive effects of bullets of high velocity received at close quarters, was very evident.

Aneurisms.—A very interesting phase of the surgical work was the presence of many aneurisms, even in his short stay Dr. Seaman saw nearly thirty of these. Often the external wound healed by first intention, and it was only after several weeks that the development of a pulsating swelling revealed the injury to the artery. This was of course due to a true aneurismal dilatation. These lesions were treated by cutting down upon the artery, tying it at both ends near the swelling and then excising the dilated portion. A certain number of traumatic aneurisms, due to the direct wounding of an artery, were also observed. In these cases the pressure of the clot made the tissues in the neighborhood friable and lowered their resistive vitality so as to make their treatment by surgical measures rather difficult. In a certain number of cases, the wounds had produced arteriovenous aneurisms. At times the bullet seems to have passed between the vein and the artery, pushing the vessels aside but injuring their coats so that later a communication took place within them. In the case of the radial artery and in the vein, the removal of portions of both the vessels brought about a cure of the condition.

Medical Aspects of the War.—Of all the cases Dr. Seaman was surprised to find no hernia, nor were there any cases of appendicitis. Besides this, so far, there has been no record of the necessity for operations upon the biliary tract. Considering the large number of men who are under arms, Dr. Seaman considers this very striking. This freedom from medical diseases and especially from affections of the digestive tract, is a tribute to the plain digestible diet which the Japanese soldier uses. In the American experience with war, these affections were so common as to make the medical history of the war much more important than the surgical. The morale of the patients in the hospitals is excellent. No complaints were heard at all. Besides this, however, there was an air of discipline about the hospital that was most encouraging, and it was evidently maintained with very little difficulty. The Russian wounded and prisoners in the hospitals seemed to be very well satisfied. They were well entertained. Most of them were peasants from the center of Russia and they were much better off than they had been at home. There were no signs of any special effort to detain them as prisoners. Many Russians hoped to stay.

Special Medical Features.—Beriberi or kakke, which used to be a scourge in the navies of the East, was wiped out of the Japanese Navy by proper regulation of the rations served to the marines. So far, it has not made its appearance in this war, though it is possible that the Japanese may have to add lentils or pea sausage, such as the Germans use, or some other form of nitrogenous food material in order to prevent it. It is now well understood that the disease is due to the starvation of the nerves and especially to the lack of nitrogenous material for their proper nutrition. All of the Japanese sailors receive three ounces of saki, a mild spirit, every day. In cases where extra work and long hours of watching are demanded of them, this amount is doubled. Of course the well-known abstemiousness in the Japanese prevents abuse in this matter. In all his experience in Japan Dr. Seaman never saw a drunken individual either in or out of the service. The Japanese army believes in the maintenance of a canteen for its soldiers as do indeed all the governments of the world now, except the American and the Chinese.

Rank of Medical Officers.—The surgeon-general of the Japanese army has the rank of Major-General. The head of the navy has the rank equivalent to that of Lieutenant-General. There are at least half a dozen of the high medical officers of the army who have a higher rank than it is possible for medical officers in America to attain, even if they should get to the highest possible place for them. Another feature of the Japanese army medical service with regard to which comparison with America is apt to make the American feel ashamed, is the number of individuals in the hospital corps of the two armies. To a division of the Japanese army consisting of about 20,000 men, 1,200 beds are allowed. Over 600 persons are considered to be necessary for the hospital service. In the United States the number of beds is much less than this and the corresponding branch of the hospital corps consists of less than 100 men. Japan was the first nation to recognize the value of the army medical corps as a life-saving institution.

Prevention of Disease.—One of the officers in charge of the Medical Department of the Japanese army remarked to Dr. Seaman that Japan realized perfectly her inferiority to Russia in the point of numbers. Japan can put half a million soldiers in the field while Russia can put two millions. So far, in war, however, it has been the custom to consider that only one man will be killed out of the four who died during the war. Japan resolved to counteract her inferiority to Russia by saving all the men that would ordinarily be lost by disease. This, so far, has been accomplished almost to a man. The advance guard is always accompanied by medical experts who examine the water, test the food and even investigate the condition of the houses in the villages in which soldiers are likely to be quartered. Wherever there has been contagious disease within a short time before the oncoming of the troops, no billet is allowed to be given for houses. The Japanese soldiers have the inherent instinct of obedience to command, and as a consequence, there are no violations of orders. In camp between marches, instructions are given by the medical staff as to how the men shall conduct themselves in order to be free from disease during the variations of the weather and the varieties of food.

Contrast with America.—The contrast with America in many points is extremely interesting. Evidently in this country pensions are preferred to prevention of disease, while in Japan, sanitation and hygiene are considered important parts of the instruction of officers.

These subjects are not taught at West Point at all. Though 80 per cent. of the losses in war are usually due to disease, it is only the killing part of the service that receives due recognition. In this country fanatic women deprive army officers of the power to regulate soldiers' habits, to some extent at least, by depriving them of the canteen. It is to America that Japan owes many lessons. From Japan, however, at the present time much could be learned.

American Needs.—Major John L. Phillips, United States Army, said that there is no doubt that a valuable lesson can be learned from the present conduct of medical affairs in war by the Japs. As a result of Dr. Seaman's calling attention to the matter, medical officers from the United States Army have now been detailed to make observations in the East. One of these goes to the Russian and the other to the Japanese army. It is not an easy matter, in the United States, however, for the army in case of war to secure good sanitariums, since the medical schools of the country furnish only a limited amount of instruction in hygiene, something less than fifty hours being the rule for the annual course in this subject.

Major Jarvis said that the Japanese have been preparing for ten years for this war with Russia. Comparison therefore of conditions with those which obtained in our recent war are entirely unfair.

Capt. A. E. Piorkowski of the Imperial German Army said that the Franco-Prussian war was the first one in history in which the proportion of men who died from disease was less than the number killed. It must not be forgotten that that war was not so short as it seemed, since troops had to continue in France for a considerable period after the actual cessation of hostilities. Von Moltke's plan of keeping the corps of the army separate and drawing them together whenever battle was expected did much to make sanitation easier than it would otherwise have been. It must not be forgotten that besides the preparation which the Japs had had for this war, they are members of a great military empire and are natural born soldiers.

Colonel Church, United States Army, said that one advantage the Japanese had in the present struggle has been the absence of any sentiment with regard to the disposal of dead bodies. With us there is apt to be insistence on the burying process. This is often so incomplete that portions of the dead are left exposed to become the prey of bird and beast and to form a nidus for infectious material that may be carried away by air or water. In Japan, however, there is no prejudice with regard to the cremation of dead bodies and consequently after a battle the bodies are simply gathered together and burned. This is a complete destruction of dangerous material and is eminently sanitary. Certainly this must be considered in the great battles of the future as one method of doing away with dangerous material that is eminently suited to this stage of our civilization.

HARVARD MEDICAL SOCIETY OF NEW YORK CITY.

Regular Monthly Meeting, held Saturday, October 22, 1904.

The President, Augustus M. Knight, M.D., in the Chair.

Seminal Vesiculotomy.—Dr. E. Fuller said that not a few patients, who suffer from the results of chronic gonorrhea, after having been submitted to all forms of treatment of the urethra, find that there is no relief afforded and after a time also find that their sexual capacity is becoming impaired. In a certain number of these cases, impotence asserts itself and the most careful examination of the seminal fluid fails to show the presence of spermatozoa. In this class of cases an examination of the seminal vesicles not infrequently reveals the fact that they are either thickened or surrounded by inflammatory products and that they are therefore evidently incapable of performing their function. For these patients, Dr. Fuller has devised the operation of vesiculotomy. Dr. Fuller said that the stripping of the seminal vesicle and massage through the rectum is often effective in mild cases of disease of the seminal vesicles. In severe cases, however, it takes too long to do good and patients become impatient, besides, for patients at a distance, it is extremely inconvenient to come as frequently as is required to the surgeon's office. Consequently the necessity for some radical procedure to which patients will be ready to submit if it promises to relieve their symptoms. The operation of seminal vesiculotomy he has now done in 33 cases without a death and as the after results have been very satisfactory, this new operation would seem to deserve a place in regular surgical procedure. With the first patients he was perfectly frank in telling them that the operation was as yet untried, but that it was not dangerous and that there was no reason why it should not be successful in affording them relief. After all the thorough opening of the seminal vesicles with drainage is only a following out of the surgical principle that has been applied to so many other cavities of the body when they have become infected.

Results of Operation.—It has sometimes been considered that operations upon the seminal vesicles might afford relief from pain and from certain of the dangers of carrying an infected area in the body, but that they could scarcely do more than this. In fact, there used to be an objection that operations upon them rendered the patient sterile and were somewhat akin to castration. One German authority, indeed, spoke of the operation as high castration. This is, however, entirely a mistaken notion. While too much was not expected or promised from early operation, the results obtained have been most satisfactory. Perhaps the most satisfying feature of the cases has been the return of sexual potency in cases where it has been absent for some time. The function of the seminal vesicle which has been lost is not infrequently regained. This is after all only what might be expected from the improvement of the local condition which takes place as a consequence of the evacuation and drainage. Dr. Fuller himself has not had a death in thirty-two cases. There seems no reason to think that in the hands of any careful surgeon thoroughly familiar with the anatomy of these parts, there should be a death. The mortality that would come would be from interference with neighboring organs, especially the rectum, the bladder, and, in certain cases, the ureter or the peritoneal cavity. Incomplete postoperative drainage might give rise to a septic condition that would easily prove serious. While the operation has its dangers, these are due to complications and are not necessarily attached to the operative procedure itself.

Contra-Indications.—In Dr. Fuller's opinion, there is just one contra-indication to the operation and that is the existence of tuberculosis of the seminal vesicles. In these cases, the sinuses do not heal well and the patients are usually in poor condition for operation and the result as regards the recovery of function is not likely to be satisfactory. Where tuberculous processes exist in connection with sem-

inal vesiculitis, that is, in neighboring genital organs, all methods of palliative treatment should be tried and surgery avoided. It is sometimes said that such an operation will need to be done only very rarely. In recent years, however, there has come the realization that secondary infections in gonorrhea involving the seminal vesicules not infrequently, are quite common. Patients suffering from conditions of the seminal vesicles requiring operation are seen much more frequently than would otherwise be imagined. After all it is not surprising that this should be the case, since the liability of the gonococcus to wander through all parts of the male genital system is now well understood.

Differential Diagnosis.—It is interesting to note how many different affections seminal vesiculitis is taken for by those who are not familiar with its ordinary diagnostic signs. In a recent case where, as a consequence of the presence of pus in the urine, with some tendency to irritation, the affection was thought to be of the bladder, all sorts of irrigation of that viscus had been carried out by various surgeons for several years. All the known urinary antiseptics that may be employed through the mouth had been prescribed in abundance and besides the various antiseptics for irrigation had been employed. All, of course, to no avail. After a time, because of the difficulty of urination, a rather characteristic difficulty at the beginning, with inability to empty the bladder completely without special effort, the affection had been taken for enlargement of the prostate. As this could not be felt, it was thought to be an enlargement of the middle lobe. It is not hard to understand how the chronic inflammatory condition around the seminal vesicle at the base of the bladder prevents its contraction to some extent, and gives rise to such a confusion. In this case all sorts of suggestions were made to the patient. One surgeon wished to perform castration, another suggested Bottini's operation, that of burning a tunnel through the supposed enlarged prostate. Still a third surgeon suggested prostatectomy.

Real Condition.—At operation, both the seminal vesicles were found suffering from a chronic inflammatory process and filled with granulation tissue. They were slit and this was scraped out with a curette. There did not seem to be much hope that the seminal vesicles would resume their functions. They have done so, however, and the patient is well satisfied with the result. As a consequence of the removal of the inflammatory products that were hampering the action of the bladder, all the urinary symptoms have now disappeared.

Lengthy Convalesence.—In cases that have suffered from the affection of the seminal vesicles for many years, it is not surprising that convalesence may require a considerable period. As Dr. Fuller has gained more and more experience in the operation, however, and has consequently been enabled to do less and less damage to tissues in the course of the operation, the period of convalesence has grown shorter. In some of these cases, the seminal vesicle is found so filled up with physiological and pathological products as to be balooned almost to the size of an egg. In such cases, of course, it is easier to find the offending organ, but in many patients, the seminal vesicles are enlarged little beyond their normal size and consequently care and experience is needed not to injure surrounding tissues, all of them of the greatest importance and associated with hollow viscera containing infectious material of great virulence.

Dr. Frederick Curtis, in discussing Dr. Fuller's paper, said that it is good surgical logic to open up cavities containing pus, no matter where they may be. As far as this is concerned, Dr. Fuller's new operations are an exemplification of a very old surgical principle. It seems not unlikely that these operations have been done before when considered necessary and that there is not the novelty that might be expected. Certainly before any operation should be done, the stripping of the seminal vesicles should be carefully tried. This constitutes an added means of treatment for chronic cases that resist massage and other remedial measures.

Valuable Addition to Surgery.—Dr. Follen Cabot said that Dr. Fuller's operation, of which he has had the opportunity to see several examples, is undoubtedly an important measure for the relief of conditions that have been considered intractable before. Any one who has a large experience in male venereal cases knows how many of these sufferers from chronic blenorrhagic conditions receive no relief and go discouraged from one surgeon to another. After a time they fail to have any hope and make most discouraging patients. This operation gives relief in these cases and restoring sexual power that has been lost for some time, brings with it a great measure of consolation to the sufferer.

Questions of Technic.—Dr. Fuller, in closing the question, answered some questions with regard to technic. In the older methods of performing operation upon the seminal vesicles, the patient was placed upon his back, and it was practically impossible to properly reach these organs. Extirpation might be accomplished, but relief could scarcely be afforded by any less serious operation. In the knee-chest position, the rectum can be dissected up and put out of the way by means of a wide incision that is an extension of the Zuckerkandl. Notwithstanding the fear that there might be infection preventing union in parts so liable to infection, good union is the rule. After the seminal vesicles have been incised, the interior is packed with gauze, which is pulled out on the fifth day. As the parts are very vascular, union proceeds rapidly and infective material is disposed of by the excellent vitality of the parts.

Acute Cases.—In some of these infections of the seminal vesicles an intensely acute condition develops with a formation of pus all around these organs. By means of this incision, such a collection can be thoroughly opened up and though for a time the parts may present a ghastly appearance, the result is excellent beyond all expectations. In one case the patient who developed an abscess deep in the perineal region, had a temperature of 105° F. and fatal septicemic infection was feared. Immediately after the evacuation of the pus the temperature came down and the large cavity healed completely under strapping and stitching.

Chronic Cases with Pus Formation.—In a certain number of cases there seems to be a collection of pus around the seminal vesicles, producing a condition of chronic invalidism, the pus finding an exit every now and then through the prostatic sinus. In these cases there is apt to be deep indefinite pain in the prostatic region and at times the burrowing of the pus may produce a sinus of communication between the bladder and rectum that accounts for the appearance of urine occasionally in the rectum. In these cases, thorough operation is the only sure means of giving these patients relief, and, as a rule, the seminal vesicles will have to be laid open in or-

der to secure thorough removement of infective materials.

Functional Results.—The results obtained are especially good as regards the sexual functions after operation. There does not seem to be a common duct of the seminal vesicles and the vasa differentia. The vas deferens on each side empty directly into the seminal vesicle and the vale in the ampulla of Henle prevents all regurgitation. This has been demonstrated by careful dissections. As a result of this, if the function of the seminal vesicle is restored, the ejaculatory element of the sexual function is also restored. This is the experience with patients who usually have the function restored which they had considered lost for good.

SOUTHERN SURGICAL AND GYNECOLOGICAL ASSOCIATION.

Seventeenth Annual Meeting, held at Birmingham, Ala., December 13, 14 and 15, 1904.

(Continued from Page 1277.)

Review of the Treatment Immediately Before and After Abdominal Section.—Dr. L. S. McMurtry, of Louisville, stated that the directness and simplicity of surgical methods were proportionate to the accuracy of pathological knowledge. The marked changes which had characterized the evolution of the modern aseptic surgical technic illustrated the truth of this observation. Present methods were wonderfully simplified in comparison with those of the early antiseptic era when chemical germicides played a conspicuous rôle in every phase of the scheme of operation. The general indications for preparatory treatment in cases of abdominal section were to cleanse the alimentary canal thoroughly without violent disturbance or exhaustion; to put all the eliminative functions in the best possible condition, and to favor in every way a tranquil state of mind and body. More than a year ago he became satisfied that to put the patient to bed for three days, or even longer, as was practised by many, was not the best course of preparatory treatment. There was a positive advantage in having the bowels cleaned out in a relatively short time, as the patient was not relaxed by purgation and was less prone to suffer from toxic changes. Prolonged and irritating catharsis increased the nausea and vomiting of ether and chloroform anesthesia. A prolonged period of preparatory treatment impaired the patient's strength and depressed the nervous system. There were exceptional cases, of course, such as associated functional and organic disease of other organs than that for which the operation was proposed. If these disturbances were the result of the disease for which the operation was to be done, no good could come of delay; but when such associated conditions were distinct from the disease for which the operation was contemplated, and which might be improved by treatment, a judicious course of preparatory treatment should be observed. The same rule should be applied to cases of anemia, and in cases of acute diffuse infection which might become circumscribed, preparatory treatment might be utilized with advantage. In the cleansing and disinfection of the skin, it is an established fact that sterilization of the skin from a bacteriological standard was impossible; yet mechanical cleansing would for all practical purposes free the skin of all active germ action and provide for immediate primary union of wounds. In the effort to accomplish this, the important fact had been overlooked that the unbroken skin was endowed with a power of resistance to the activity of its own and other germs; and when the epidermis was cracked, denuded and broken by irritating germicides, and scrubbing with hard brushes, this natural resistance was impaired, and infection occurred. Mechanical cleansing would remove germs readily from smooth and unbroken cutaneous surfaces. For these reasons the brush and chemical germicides should be discarded, and only soap and water and alcohol should be used, applying these with gauze instead of the brush. In the after-treatment only the most simple course was necessary in average cases. The routine use of purgatives here, as in the preparatory treatment, was to be avoided. The patient should be allowed to move about in bed freely, and should be given water as soon after operation as it could be retained.

Employment of Celluloid Plates for Covering Openings in the Skull in Operations for Epilepsy, Brain Tumor, Etc.—Dr. William P. Nicolson, of Atlanta, Ga., read a paper with this title. He said that celluloid was a material which remained indefinitely in the tissues without irritation or disturbance, and the physical character of it was such that it could be easily shaped with scissors to the required size and shape for adjustment to the opening to be covered. Its harmlessness in the tissues was demonstrated to him many years ago by the absence of any irritation from a celluloid testicle introduced by him into a patient's scrotum. Given such a material, one was enabled to enlarge the opening in the skull to whatever size he might desire, knowing that he could cover the opening and protect the brain from subsequent injury or from undue protrusion from want of support. In operations for epilepsy it not only protected the brain from subsequent pressure, but left an increased space, which was measured by the thickness of the individual's skull. After describing the technic of inserting the celluloid, the author reported a case of cyst of the brain which produced epilepsy. He also reported two cases of Jacksonian epilepsy, and one of exploratory operation on the brain. Although the duration of the cases reported did not give a long observation of results, the author felt safe in making the following claims for the routine application of this principle to all operations, where the surgeon was compelled to make openings of any size in the skull: (*a*) It was safe, and did not add any extra risk to the operation. (*b*) It not only removed the pressure and irritation, which the surgeon was endeavoring to combat, but by its resistance prevented a recurrence from the subsequent consolidation of the coverings in a false position due to atmospheric pressure. (*c*) It protected the patient from external influences, and not only made him feel safer, but he was actually safer. (*d*) It enabled surgeons to be much more untrammeled in the amount of bone that they could remove. (*e*) It prevented deformity, which especially, when beyond the hair line, was necessarily great in large bone removals.

Traumatic Synovitis of the Knee Joint.—Dr. Edward A. Balloch, of Washington, D. C., made a plea for earlier operative intervention in cases of traumatic synovitis, the author's contention being that so-called conservative measures should not be tried too long. The reluctance of surgeons to open the joint was ascribed in part to a fear of sepsis and in part to a lack of a precise knowledge as to the normal structure of the joint. Illustrative cases were

cited showing the advantages of early operative intervention. The following conclusions were reached: (1) In most, if not all, cases of traumatic arthritis of the knee, there was an injury to some of the structures of the joint. (2) Conservative measures should not be persisted in too long. Three weeks was proposed as a fair length of time for a trial of these measures. If no improvement was manifest at the end of that time, the propriety of operative intervention should be considered. (3) Arthrotomy, properly performed, was not an essentially dangerous procedure, and might do great good. (4) Early operative intervention would give a greater proportion of useful joints in a shorter space of time than any other method.

Cases in Which Early Diagnosis of Cancer of the Body of the Uterus was Made.—Dr. Rufus B. Hall, of Cincinnati, O., read this paper. To show that an early diagnosis of primary cancer of the body of the uterus was possible, or tnat a diagnosis could be made while the disease was yet very limited in extent, the author reported two cases. Of the many cases of cancer of the body of the uterus coming under his observation only these two were seen early enough to make a diagnosis while the disease was limited to a very small area. Adenocarcinoma was found to be the variety of the disease in each case. It was this form of the disease that most frequently attacked the body of the uterus, and if recognized early it promised great immunity from recurrence. The disease could be diagnosed in its incipiency if surgeons systematically curretted every suspicious case and made repeated microscopic examinations of the scrapings removed from the uterus until they confirmed or disproved the presence of malignant disease.

Contribution to the Origin of Adenomyoma of the Uterus.—Dr. J. Whitridge Williams, of Baltimore, Md., after calling attention to the anatomical appearance of adenomyomata of the uterus, and the various theories which had been advanced according to the origin of the epithelial structures contained in them, described a uterus removed at autopsy from a woman who died just after delivery as the result of hemorrhage from placenta previa. At the time of its removal the uterus apparently presented the characteristic appearance of the organ immediately following delivery, except that the area of placental attachment covered two-thirds of its interior, instead of being more circumscribed and limited to the anterior or posterior wall, thus indicating in all probability that interference with its blood supply had led to a much more extensive implantation of the placenta than usual. On making a sagittal section through the uterus after hardening, numerous irregularly shaped, more or less oval areas, of a dull white appearance, and varying from a millimeter in diameter to structures five by ten mm. in their various dimensions, could be seen throughout the entire thickness of the uterine walls, which measured three cm. in their thickest parts. These areas were most abundant immediately beneath the endometrium, but could be traced outward through the entire thickness of the uterine wall to its peritoneal covering. Upon microscopic examination they were found to consist of typical decidual tissue, which was made up of the characteristic decidual cells and glandular spaces lined by cuboidal epithelium. The speaker stated that so far as he could ascertain this was the first case in which such a distribution of decidual tissue had been observed, and then proceeded to discuss the importance of such an observation in contributing toward determining the derivation of the epithelial structures contained in adenomyomata. In his specimen there could be no doubt as to the origin of the decidual areas, and everyone must agree that they were derived from the uterine mucosa. Their wide distribution throughout the uterine muscle precluded the possibility of their having resulted postpartum, and indicated most conclusively that they must have existed prior to the onset of pregnancy. Such being the case, the specimen afforded a most beautiful example of the presence of tissue derived from the endometrium being scatterd throughout the myometrium of an adult woman, and should myomata happen to develop in their vicinity, a most satisfactory basis for the development of an adenomyoma would be offered. Dr. Williams then mentioned the fact that in not a few cases the glandular elements in typical adenomyomata showed changes identical with those occurring in the menstruating endometrium, and held that the development of the decidual tissue in his case seemed to make it probable that where portions of Müllerian tissue were scattered through the myometrium, they might undergo the same changes as the normal endometrium, namely, menstruation and decidual formation. The speaker then referred briefly to the literature upon the histogenesis of adenomyomata, and pointed out that von Recklinghausen's contention that they were of Wolffian body origin, which at first had been received with great enthusiasm, had gradually lost ground, so that the vast majority of recent writers hold that such structures are developed more frequently from Müllerian than from Wolffian body elements, some even going so far as to state that only the former mode of origin was possible. The speaker, however, made it clear that he did not wish to be understood as taking so extreme a ground, but felt that while the vast majority of such growths were clearly derived from Müllerian tissue, conclusive evidence against the Wolffian body origin of certain cases had not yet been and probably never could be adduced.

Development of Fibroids of the Uterus After Ablation of the Appendages.—Dr. J. Wesley Bovée, of Washington, D. C., stated that the large number of published cases of fibroid tumors that had undergone malignant degeneration, or that had broken down, became infected or underwent other changes in structure detrimental to the lives of their unfortunate possessors had swept away the old ideas as to their benignancy. Pathologists were now searching for a distinct borderline between benign and malignant soft uterine myomata. Recurrent myomata, while not so positively dangerous as cancer, must be considered malignant. Between these and sarcomata there was not always a distinct difference. Five cases were cited. Of these, two were operated upon for non-infectious disease, two were victims of infection, and in one the condition requiring removal of the appendages was not known. Did the sudden change in the pelvic circulation incident to the ligation of the utero-ovarian blood vessels in double salpingo-oophorectomy act as a cause of the subsequent fibroid degeneration of the uterus? This question might be reasonably answered negatively, else such degeneration might logically be seen commonly instead of rarely. Yet it might be possible that hemorrhagic infarcts in the uterus might occasionally in that manner be formed that would result in hyperplasia of connective tissue and be the origin of fibromata. In considering the changes in the uterus after ablation of the appendages in the lower animals, the author quoted the experimental work of Hunter Robb and others, and stated that from

these experiments and investigations, one could find but one theory upon which to base a cause for the development of fibroids after double alpingo-oophorectomy. This was the endarteritis obliterans, noted by Benckeiser. The speaker wished the relation was clearer and more cases could be cited in substantiation. In all the cases of development of fibroids of the uterus after removal of the appendages cited in the paper, the tumors were multiple, showing the existence of a number of foci, and pathologists had been interested in endarteritis obliterans in the uterus as the origin of fibroid tumors. The cases of such development of fibroids after castration were probably rare, and their existence must be due to some rare cause, such as was this form of endarteritis. In the absence of a better explanation, he was disposed to accept this one.

The Effect of Suspensio-Uteri on Pregnancy and Labor.—Dr. Joseph Taber Johnson, of Washington, D. C., in a paper with this title, contended that very few if any such injurious effects need be feared as had been frequently charged against the operation of suspensio-uteri. That it sometimes failed to cure was true, but that was not the charge. By ventrosuspension he did not mean ventrofixation. He was free to admit that the uterus should not be securely fixed into the abdominal wound or to the abdominal wall in women likely to become pregnant. It was quite certain that some of the pains of pregnancy and difficulties of labor which had been charged against suspension were really the result of fixation. In over one hundred suspensions done by himself he only knew of two pregnancies. These were both normal. In one case the labor was so rapid that the child was born before the doctor's arrival, and he knew from recent examinations that there had been no return of the retroversion. The other case he delivered in November last after a five-hour normal labor, without chloroform or forceps. The author mentioned the number of suspension operations performed by other operators, and concluded by saying that when the retrodisplaced or prolapsed uterus was suspended, not fixed, according to the technic of the author of the operation, it appeared to him to be the best operation yet devised for the great majority of women suffering with this displacement irrespective of the fact that they might become pregnant subsequently.

Typhoid Fever and Appendicitis.—Dr. John C. Oliver, of Cincinnati, Ohio, called attention to the possibility of these diseases being so irregular in their manifestations as to be mistaken the one for the other. He cited illustrative cases in which these mistakes had been made. A case was also reported in which an attack of appendicitis was followed within a month by an attack of typhoid fever. The possibility of mistaking the perforation of a typhoid ulcer for an acute attack of appendicitis was exemplified by the report of a case of walking typhoid in which perforation of the ileum occurred. The author's conclusions were: (1) That typhoid ulcers may appear in the glandular structures of the appendix and give rise to a typhoid appendicitis. (2) That the infiltration of the ileum and cecum in typhoid fever may be so great as to give rise to a distinct tumor mass in the right iliac fossa. (3) That the Widal test is of but little, if any, value in the early diagnosis of the disease present. (4) That the leucocyte count proved in his series of cases to be of value in distinguishing between the two diseases. (5) That an exploratory laparotomy in typhoid fever is not devoid of danger. (6) That abdominal incision is imperative when it becomes necessary to establish the differential diagnosis between a typhoid perforation and fulminant appendicitis. (7) That in the absence of perforation, cases of typhoid appendicitis should not be operated upon."

Problems Presented to the Gynecologist Twenty-Five Years Ago and To-day.—Dr. P. F. Chambers, of New York City, read a paper with this title, in which he said that the problems presented to the gynecologist of that date were entirely different from those of to-day, and as different, he had no doubt, as would be those of twenty-five years hence. To illustrate the class of diseases that patients had twenty-five years ago and were admitted to hospitals and the methods of treating them in vogue then, he gave the diagnosis of all the patients who were admitted to the Woman's Hospital of New York at that time, and the operations which were there performed for the relief of these conditions. The peritoneum was the surgeon's *bête noir*. Abdominal surgery, then in its infancy, constituted but a little part of the work of the gynecologist. This was before the days of asepsis. Antiseptic surgery was then in vogue; consequently the mortality of all abdominal work was still so great the abdomen was never opened except in desperate cases, such as for the removal of ovarian cysts, or the ovaries in cases of intensely severe dysmenorrhea, or very large fibroids as then advocated by Battery, Tait or Hegar. For other causes, for which now the abdomen was readily opened, it was then a sealed book. Except where retroversion of the uterus was due simply to an elongation of the ligaments, and when the uterus was small, was easily replaced, and the force from above was slight, the author preferred the ventrosuspension operation in all cases. Then he would perform the operation for shortening of the round ligaments either by exsecting a portion of the ligament and bringing the ends together, or by looping the tube upon itself. He never did a ventrofixation. An example of conservative surgery upon the uterus was given in the case of fibroids. The Trendelenburg posture had had more to do with the solving of gynecological intra-abdominal problems than any other aid in the technic of the operating room.

(To be Continued.)

MANHATTAN DERMATOLOGICAL SOCIETY.

Regular Monthly Meeting, held November 4, 1904.

The President, I. P. Oberndorfer, M.D., in the Chair.

Bromoderma.—Dr. B. F. Ochs presented a case of this affection with large papulo-pustules, nodules and excoriations; best seen on the buttocks, lower limbs, face, scalp, and some papules on lower eyelids; the lesions followed the administration of two-grain doses of natr. brom., given to a baby, three months old, for an acute attack of bronchitis. Dr. Bowman commented upon the extreme degree of inflammatory irritation and believed this to be due to treatment. Dr. Weiss said the eruption resembled that following iodine; he likewise commented upon the grave inflammatory lesions following such small doses of bromides. Dr. Gottheil saw three other cases, and from the character of the eruption alone would make the diagnosis without the history; severe eruption will often follow the use of small doses of bromides. Dr. C. W. Allen agreed in the diagnosis made; the condition is often rebellious to treatment, but will get well; the general features of such eruptions were alike and typical; he saw bromine eruption in adult epileptics, taking the drug. Dr. Pisko also noted severe lesions after small doses of bromides; the physician usually sees the cases after the parents maltreat the child at home; hence the unusual type of inflammatory irritation as seen in this case. Dr. Blei-

man called attention to the susceptibility of young infants to certain drugs, especially quinine and belladonna.

Herpetic Chancre.—Dr. Ochs presented a young man having a lesion on penis; when first observed the lesion was of a herpetic character; at present a granulating slightly indurated ulcer is seen; slight inguinal adenitis and a mild secondary (?) eruption was observed by Dr. Ochs up to two days ago; presented as herpetic chancre. A second smaller lesion is also observed close by. Dr. Gottheil, who also observed the case, stated that varied and indifferent treatment for the past five weeks did not change the herpetic character of the lesion; the presence of parchment induration, local adenitis and mild roseola favored diagnosis of hard chancre. Drs. Bowman, Pisko and Oberndorfer regard them as multiple chancroids; the induration present is that of inflammation and not the characteristic hardness of a true chancre; besides the existence of a roseola is in doubt.

Guttate Psoriasis.—Dr. Ochs then showed a case of marked seborrhea involving hairy parts of face, including eyebrows and eyelashes; case under observation over one year; recently his lower limbs presented distinct lesions of guttate psoriasis, a condition never observed before. Dr. Ochs asked if there was any connection between the two present lesions. Drs. Weiss and Pisko recognize two distinct lesions; the members concurred in this opinion.

Urticaria Pigmentosa.—Dr. W. S. Gottheil presented two cases. *Case I.*—Male infant, ten months old; during the past summer the body and especially the buttocks were covered with small inflammatory papules; these disappearing leave a corresponding area of light pigmented skin; new lesions now on chest look like urticaria papules; the mother states at no time was there itching. (?) Dr. Gottheil presents the case as one of urticaria pigmentosa. Drs. Sobel, Bleiman and Pisko agree in the diagnosis of urticaria pigmentosa. Dr. Weiss said the lesions resembled urticaria; the skin showed dermographia; these and other angioneurotic conditions, such as acute outbreaks and the pigmentation following seem to bear out the correctness of the diagnosis made; a condition closely allied was erythema papulosum, but pigmentation following was rare. Dr. Allen accepts the diagnosis of urticaria pigmentosa.

Dermatitis Herpetiformis.—*Case II.*—A young girl, aged fourteen years, with grouped vesicular and bullous inflammatory lesions on the face, surrounded by healthy skin; three years ago patient had a similar outbreak, but on the body, the character of the lesions always being the same; at present, the face, arms and legs show these vesicular lesions; recurrent attacks date back ten years; presented as a case of dermatitis herpetiformis. Diagnosis concurred in.

Epidermolysis Bullosa Hereditaria.—Dr. E. L. Cocks presented this interesting case. The patient, a boy of nine years, has been under observation for the past twenty months and was well up to two years ago. There is no history of bullous eruptions in parents or other members of the family; the eruption at present is confined to limited parts of the face, ears and upper and lower limbs (scattered patches); innumerable milia are seen on face and neck; trauma to the epidermis is followed by development of bullæ; photographs taken recently and presented show such formations on palms, lower arms and lower legs; serosanguinolent lesions were observed on tongue and roof of mouth, some time ago. Dr. Allen stated the absence of definite lesions in the parents robs the case of one of its characteristics; the present lesions and other traumatic bullæ undoubtedly favored diagnosis of epidermolysis bullosa. Drs. Weiss and Gottheil stated that the history was negative; the traumatic lesions were typical; they concurred in the diagnosis made.

Pityriasis Rubra.—Dr. E. L. Cocks showed a man whose entire skin was thickened and covered with slight desquamation; four weeks ago the process began on the back as two large erythematous patches, these extending, involving the entire interment; skin now pale and dry and under local treatment is getting better; patient gives history of excessive and profuse sweating upon little exertion. Presented with tentative diagnosis of pityriasis rubra. Dr. Bleiman said the marked induration of the skin spoke for a lesion of more than four weeks' duration. Pityriasis rubra was characterized by hyperemia of the skin and was progressive; he could not agree with Dr. Cocks, but classes it as a chronic dermatitis. Dr. L. Weiss stated the primary lesion was obscure; the marked thickening and paleness of skin did not favor diagnosis of pityriasis rubra; the patient's skin was characterized by a marked keratosis, and lichenization; for want of a better term he designates the condition as lichen keratosis. Dr. E. Pisko quotes Crocker on Sweat Eczema; he thought this resembled the condition as described. Dr. Gottheil called it chronic universal eczema; the hands show fissures and marked lichenization. Dr. Allen was also impressed with the marked degree of lichenization; he would not call it pityriasis rubra and preferred to leave diagnosis open until case could be again observed. Dr. Cocks stated various diagnoses were made by as many dermatologists—chronic eczema, chronic psoriasis, pityriasis rubra and dermatitis exfoliativa.

Favus of the Scalp.—Dr. C. A. Kinch presented three cases of this disease: *Case I*, showing result of treatment; a few red spots were still visible and the growth of hair is returning. *Case II*, a more pronounced case; typical yellow favus cups still visible and old healed lesions shows scarring. *Case III*, under observation two years and now almost cured. The treatment in general consisted of epilation and local application of ointments of iodine, 10 per cent. in goose grease or binoxide of mercury, 1 to 2 grams in 30 grams sulphur ointment; also bichloride washes of $^1/_{1000}$ to $^1/_{200}$ strengths. Case II was conceded to be favus, but in Cases I and III some doubts was entertained; epilation and local antiparasitic remedies were advocated; Dr. Allen, in addition, saw good results follow use of X-ray. Dr. L. Weiss agitated the position taken by local health boards in excluding contagious scalp diseases from attending public schools. Dr. Gottheil stated that a movement recently to procure suitable isolation quarters and instruction for such cases was not seriously considered by the present health authorities.

Simultaneous Chancres of Lips.—Dr. I. P. Oberndorfer presented a young man with lesions on upper and lower lips, of four weeks' duration; sub- and post-maxillary glands enlarged; the body shows a roseola; a beginning pharyngitis and sore throat is likewise observed; presented as simultaneous chancres of upper and lower lips.

BOOKS RECEIVED.

VITAL STATISTICS. Department of Health, City of Chicago. 8vo, 122 pages. Chicago.

A TEXT-BOOK OF HISTOLOGY. By Dr. F. R. Bailey. 8vo, 482 pages. Illustrated. Wm. Wood & Co., New York.

THE DOCTOR'S RED LAMP. The Doctor's Recreation Series. Volume II. 8vo, 340 pages. Illustrated. The Saalfield Publishing Co., Akron, Chicago and New York.